

PRELIMINARY NOISE STUDY

**31460 AQUEDUCT ROAD LOT SPLIT
TPM 21159RPL2
APN 127-110-81**

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GLOSSARY OF TERMS

Sound Pressure Level (SPL): a ratio of one sound pressure to a reference pressure (L_{ref}) of 20 μ Pa. Because of the dynamic range of the human ear, the ratio is calculated logarithmically by $20 \log (L/L_{ref})$

A-weighted Sound Pressure Level (dBA): Some frequencies of noise are more noticeable than others. To compensate for this fact, different sound frequencies are weighted more.

Minimum Sound Level (L_{min}): Minimum SPL or the lowest SPL measured over the time interval using the A-weighted network and slow time weighting.

Maximum Sound Level (L_{max}): Maximum SPL or the highest SPL measured over the time interval the A-weighted network and slow time weighting.

Equivalent sound level (L_{eq}): the true equivalent sound level measured over the run time. L_{eq} is the A-weighted steady sound level that contains the same total acoustical energy as the actual fluctuating sound level.

Day Night Sound Level (LDN): Representing the Day/Night sound level, this measurement is a 24 –hour average sound level where 10 dB is added to all the readings that occur between 10 pm and 7 am. This is primarily used in community noise regulations where there is a 10 dB “Penalty” for night time noise. Typically LDN’s are measured using A weighting.

Community Noise Exposure Level (CNEL): The accumulated exposure to sound measured in a 24-hour sampling interval and artificially boosted during certain hours. For CNEL, samples taken between 7 pm and 10 pm are boosted by 5 dB; samples taken between 10 pm and 7 am are boosted by 10 dB.

Octave Band: An octave band is defined as a frequency band whose upper band-edge frequency is twice the lower band frequency.

Third-Octave Band: A third-octave band is defined as a frequency band whose upper band-edge frequency is 1.26 times the lower band frequency.

Response Time (F,S,I): The response time is a standardized exponential time weighting of the input signal according to fast (F), slow (S) or impulse (I) time response relationships. Time response can be described with a time constant. The time constants for fast, slow and impulse responses are 1.0 seconds, 0.125 seconds and 0.35 milliseconds, respectively.

EXECUTIVE SUMMARY

This noise study was completed to determine the noise impacts associated with the development of the proposed TPM 21159RPL2 Residential Project. The project is located west of Interstate 15 and north of Camino Del Rey at 31460 Aqueduct Road, Bonsall CA. The project is in the unincorporated area of northern portion of the County of San Diego, California. The proposed project is a five (5) lot residential subdivision. The project consists of four new residential lots and one remainder lot on approximately 58 acres with a minimum lot size of 4 acres. The site is zoned Limited Agriculture (A70), allowing one dwelling unit per 4 acres.

This noise study has been completed to determine the noise impacts associated with the development of the proposed TPM 21159RPL2 residential project. The results of this analysis indicate that future vehicle noise from Interstate 15 is the principal source of community noise that could impact the site.

This noise study has been completed to determine the noise impacts associated with the development of the proposed TPM 21159RPL2 residential project. It was determined from the detailed analysis that the NSLU of Parcel 1 will comply with the County of San Diego 60 dBA CNEL exterior noise standard. This is due to the existing topography, proposed pad grading and the offset in elevation and distance from Interstate 15 to Parcel 1.

Parcels 2, 3 and 4 were found to exceed the County of San Diego 60 dBA CNEL exterior noise standard and mitigation measures and a more detailed analysis are required. The sensitive outdoor areas of Parcel 2 will require the installation of a 6-foot high barrier along the eastern and southern portion of the pad to block noise from Interstate 15. The 6-foot high barrier for Parcel 2 can be constructed of earthen berm, a masonry block wall, ¼" thick glass or any combination of these materials.

The noise affected outdoor areas at Parcels 3 and 4 require the grading of a large earthen berm to block direct line of sight to Interstate 15. Through detailed noise modeling and site redesign coordination with the project engineer the following mitigation measures were determined for Parcels 3 and 4 to reduce noise levels at 10% of the net Parcel area (17,424 square-feet for 4 acres).

Parcel 4, located adjacent to Interstate 15

It was determined that a combination of lowering the pad elevation to 330-feet and utilizing the excess soil to create a berm starting with an elevation of 310-feet in the southern portion of the site and rising to an elevation of 364-feet and continuing north between the proposed pad and roadway would reduce noise levels below the 60 dBA CNEL thresholds.

Parcel 3, located west of Parcel 4

It was determined that an earthen berm will need to be constructed along the southern portion of the lot, varying in height from 314-feet in the southeastern portion of the site to 350-feet in the southwestern portion of the site to shield noise from Interstate 15 while allowing access and drainage. The combination of the two berms for Parcels 3 and 4 are required to reduce the noise levels at Parcel 3 below the 60 dBA CNEL threshold. Therefore, the grading of both Parcel 3 and Parcel 4 berms must be completed prior to the occupancy of Parcel 3.

The building facades of Parcels 2, 3 & 4 were found to be at or slightly above the General Plan Noise Element Standard, of 60 dBA CNEL. Therefore, interior mitigation for these parcels is required to obtain an interior level of 45 dBA CNEL. This report would finalize the noise requirements based upon precise grading plans and actual building design specifications.

Mechanical ventilation systems operational noise levels for single-family dwellings and normal residential activities and are anticipated to comply with the County Noise Ordinance without mitigation measures.

Results of the analysis indicate that the project will meet the County of San Diego 75 dBA CNEL standard for grading activities at all the Parcels with the exception of Parcel 3 and the following mitigation measures should be considered. Install a 10-foot high temporary noise barrier to block the equipment noise from the nearest property line to the south when the equipment is located within 50-feet of that property line during the grading of the required berm. Or if no noise barrier is used, only utilize one (1) piece of equipment at a time when working within 50-feet of the nearest property line and limit the equipment operations to 2 hours per day. Once the berm is completed it will shield grading noise and the temporary barrier can be removed.

The potential short-term impacts during the grading operations at Parcel 3, it is recommended that noise monitoring be conducted during the grading operations when the equipment is needed within 50-feet of the nearest property line. The monitoring should be conducted by a County of San Diego approved acoustical consultant. Once the berm height increases and the majority of the equipment are shielded by the berm, the noise monitoring and temporary barriers will no longer be needed.

1.0 INTRODUCTION

1.1 Project Description

This noise study was completed to determine the noise impacts associated with the development of the proposed TPM 21159RPL2 Residential Project. The project is located at 31460 Aqueduct Road, Bonsall California (32°51' 10" N and 116°56' 12" W) west of Interstate 15 and north of Camino Del Rey in the unincorporated area of northern San Diego County. The proposed project is a five (5) lot residential subdivision. The project consists of four new residential lots and one remainder lot on approximately 58 acres with a minimum lot size of 4 acres. The site is zoned Limited Agriculture (A70), allowing one dwelling unit per 4 acres.

The proposed on-site noise sensitive land uses (NSLU) located on the project site is the private outdoor usable open spaces at each proposed single family dwelling. The site is surrounded by similar residential uses. The general location of the project is shown on the Vicinity Map, Figure 1-A. The site plan used for this analysis is shown in Figure 1-B.

1.2 Environmental Settings & Existing Conditions

a) Settings & Locations

The proposed project site address is 31460 Aqueduct Road in the Bonsall Community Planning Area and currently consists of one residential use. There is no natural vegetation and the site has been completely disturbed by previous activities. The site is bound on the north, south and west by single-family residents and across Interstate 15 to the east by single family residences. Site access is provided from Camino Del Rey via Old Highway 395 connecting to Interstate 15.

b) Existing Noise Conditions

The project is located adjacent to Interstate 15 and north of Camino Del Rey (a residential roadway). The project is in the Bonsall Community Planning Area of the County of San Diego. Existing traffic noise occurs mainly from Interstate 15 and has a posted speed of 65 MPH. Current on-site operations which produce noise are the existing resident and surrounding residential activities.

Figure 1-A: Project Vicinity Map

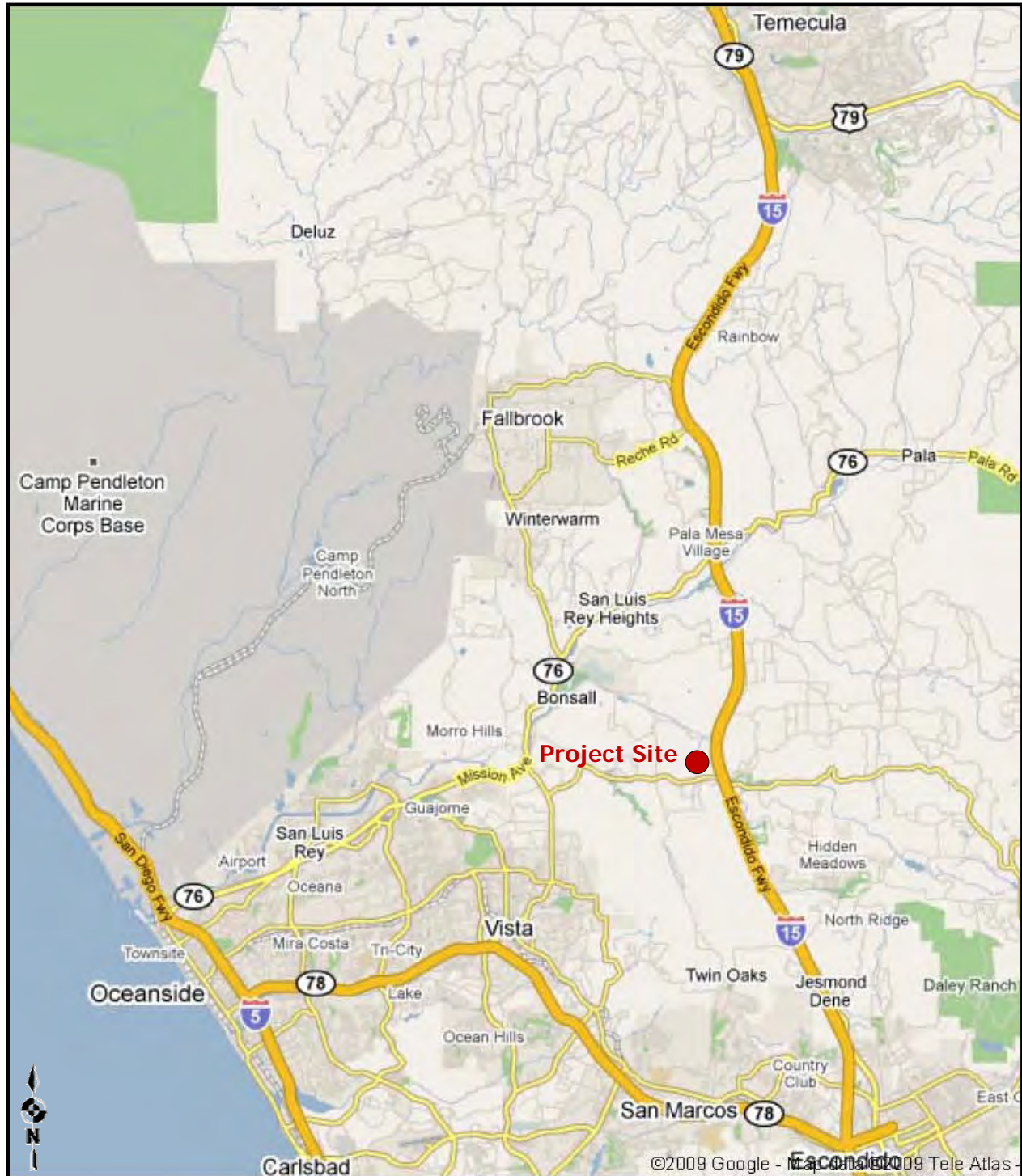
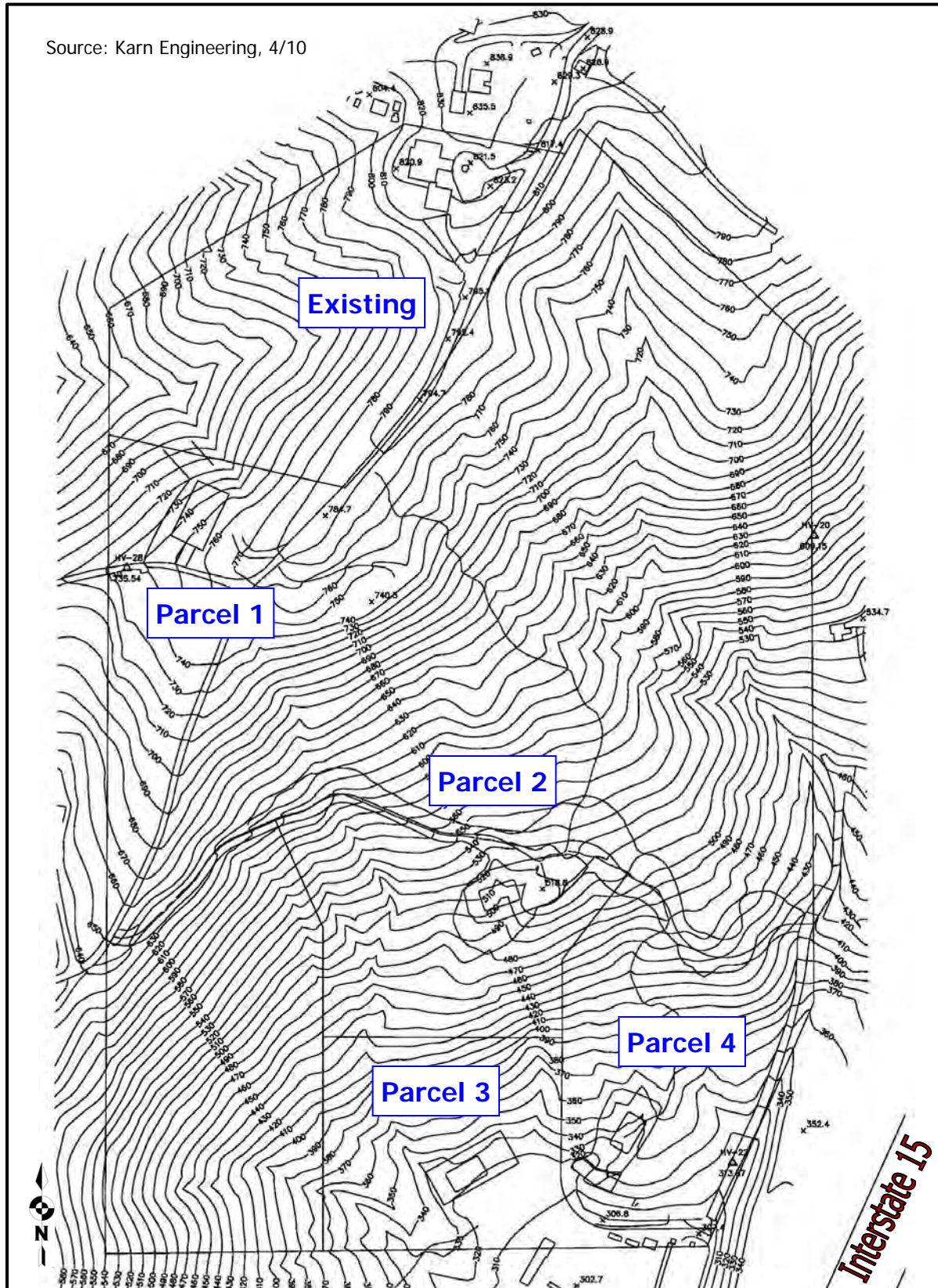


Figure 1-B: Project Site Plan for TPM 21159



1.3 Methodology and Equipment

a) Noise Measuring Methodology and Procedures

To determine the existing noise environment and to assess potential noise impacts, measurements were taken along the eastern portion of the site having a direct line of site to Interstate 15 and the western portion of the site along Aqueduct Road. This was done to determine the worst case conditions at the proposed NSLU's of the proposed Parcels 1 & 4. The noise measurements were recorded on July 22, 2009 by Ldn Consulting, Inc. between approximately 2:15 p.m. and 3:00 p.m.

The noise measurements were taken using a Quest Sound Pro DL-2 Type 2 precision sound level meter. The meter was programmed, in "slow" mode and set to record noise levels in an "A" weighted form. The sound level meter, preamp and microphone were mounted on a tripod, raised five feet above the ground and equipped with a windscreen during all measurements. The sound level meter was calibrated before and after the monitoring period on site using a Quest calibrator, Model QC-10.

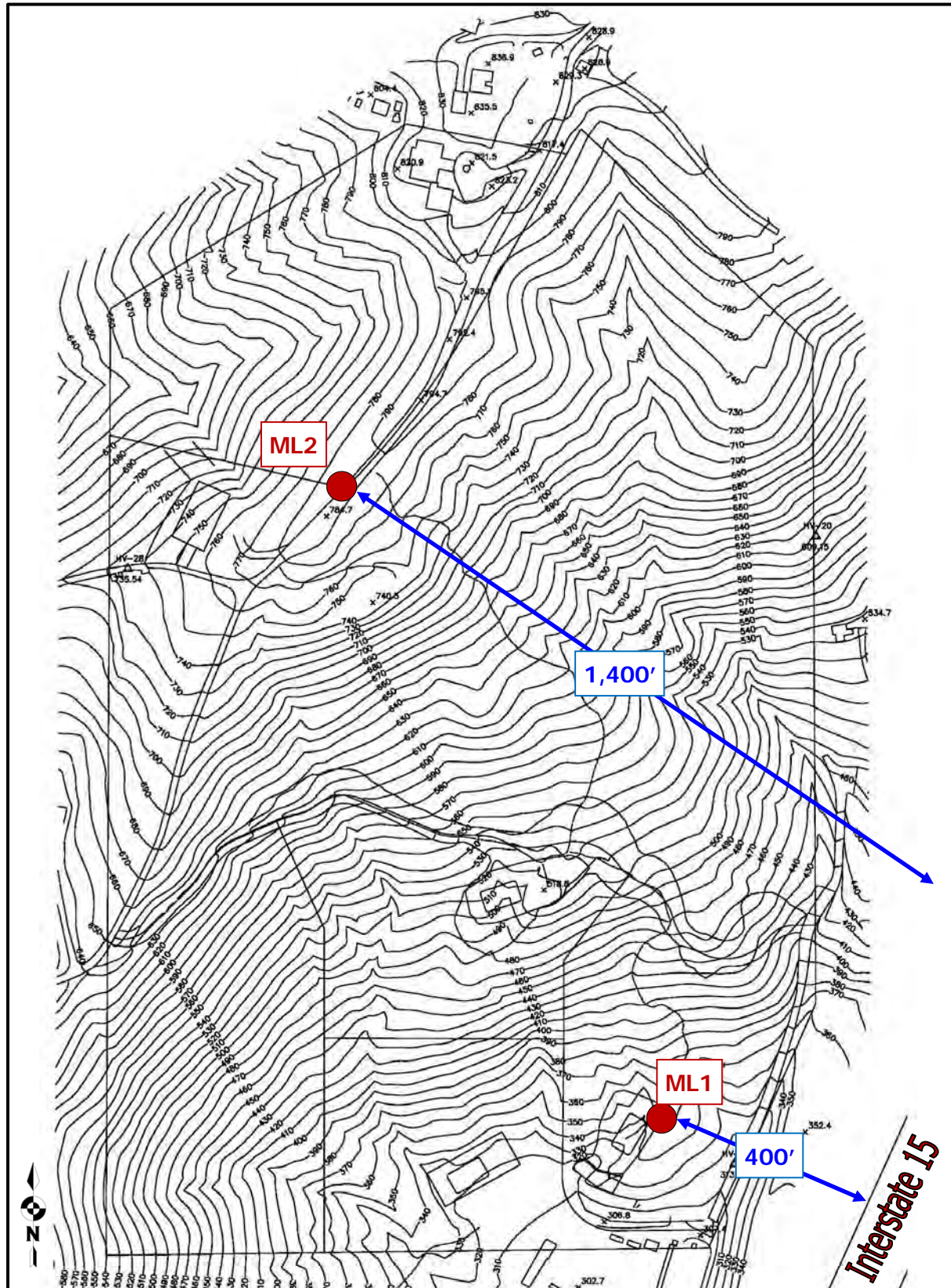
Monitoring location 1 was located near the center of the proposed pad area of Parcel 4 roughly 200-feet from Interstate 15. Monitoring location 2 was located near the proposed pad of Parcel 1 east of Aqueduct Road having line of sight to Interstate 15. The noise monitoring locations are provided graphically in Figure 1-C below.

The results of the noise level measurements are presented in Table 1-1. The noise measurements were monitored for a minimum time period of 15 minutes. The ambient Leq noise levels measured in the area of the project during the afternoon hour was found to range between 55 and 61 dBA Leq. The existing noise levels in the project area consisted primarily of traffic on Interstate 15.

Table 1-1: Existing Noise Levels

Location	Time	One Hour Noise Levels (dBA)					
		Leq	Lmin	Lmax	L10	L50	L90
ML1	2:15–2:35 p.m.	61.2	56.5	66.6	63.2	60.6	58.7
ML2	2:45–3:00 p.m.	55.6	50.2	60.2	57.5	55.0	52.4
Source: Ldn Consulting, Inc. July 22, 2009							

Figure 1-C: Noise Measurement Location at TPM 21159



b) Noise Modeling Software

The expected roadway noise impact from Interstate 15 was projected using Caltrans Sound32 Traffic Noise Prediction Model. Sound32 is a peak hour based traffic noise prediction model. The results of this analysis are based on the California Vehicle Noise Emission Levels (CALVENO).

The Sound 32 model was calibrated in accordance with the FHWA Highway Traffic Noise Prediction Manual (Report RD-77-108) and in accordance with Caltrans Technical Noise Supplement (TeNS) section N-5400. The critical model input parameters, which determine the projected vehicular traffic noise levels, include vehicle travel speeds, the percentages of automobiles, medium trucks and heavy trucks in the roadway volume, the site conditions (hard or soft) and the peak hour traffic volume. The peak hour traffic volumes range between 6-12% of the average daily traffic (ADT) and 10% is generally acceptable for noise modeling purposes.

The required coordinate information necessary for the Sound32 traffic noise prediction model input was taken from the revised preliminary site plans provided by Karn Surveying and Engineering received on April 6, 2010. To predict the future noise levels the preliminary site plans were used to identify the pad elevations, the roadway elevations, and the relationship between the noise source(s) and the NSLU areas. Traffic was consolidated into a single lane for each directional flow of Interstate 15. Longer roadway segments were subdivided into a series of adjoining segments for analysis. For this analysis, the roadway segments were extended a minimum of 500 feet beyond the observer locations. No grade correction or calibration factor (according to Caltrans Policy TAN-02-01 dated January 17, 2002) was included as part of the Sound32 traffic noise prediction model analysis.

To evaluate the potential noise impacts on the proposed development, outdoor observers were located in NSLU areas and placed five feet above the pad elevation. All second floor building facades were located fifteen feet above the proposed pad elevation.

c) Noise Calculations and Factors

Noise is defined as unwanted or annoying sound which interferes with or disrupts normal activities. Exposure to high noise levels has been demonstrated to cause hearing loss. The individual human response to environmental noise is base on the sensitivity of that individual, the type of noise that occurs and when the noise occurs.

Sound is measured on a logarithmic scale consisting of sound pressure levels known as a decibel (dB). The sounds heard by humans typically do not consist of a single frequency

but of a broadband of frequencies having different sound pressure levels. The method for evaluating all the frequencies of the sound is to apply an A-weighting to reflect how the human ear responds to the different sound levels at different frequencies. The A-weighted sound level adequately describes the instantaneous noise whereas the equivalent sound level depicted as L_{eq} represents a steady sound level containing the same total acoustical energy as the actual fluctuating sound level over a given time interval.

The Community Noise Equivalent Level (CNEL) is the 24 hour A-weighted average for sound, with corrections for evening and nighttime hours. The corrections require an addition of 5 decibels to sound levels in the evening hours between 7 p.m. and 10 p.m. and an addition of 10 decibels to sound levels at nighttime hours between 10 p.m. and 7 a.m. These additions are made to account for the increased sensitivity during the evening and nighttime hours when sound appears louder.

A vehicle's noise level is from a combination of the noise produced by the engine, exhaust and tires. The cumulative traffic noise levels along a roadway segment are based on three primary factors: the amount of traffic, the travel speed, and the vehicle mix ratio or number of medium and heavy trucks. The intensity of traffic noise is increased by higher traffic volumes, greater speeds and increased trucks.

Because mobile/traffic noise levels are calculated on a logarithmic scale, a doubling of the traffic noise or acoustical energy results in a noise level increase of 3 dBA. Therefore the doubling of the traffic volume, without changing the vehicle speeds or mix ratio, results in a noise increase of 3 dBA. Mobile noise levels radiate in an almost oblique fashion from the source and drop off at a rate of 3 dBA for each doubling of distance under hard site conditions and at a rate of 4.5 dBA for soft site conditions. Hard site conditions consist of concrete, asphalt and hard pack dirt while soft site conditions exist in areas having slight grade changes, landscaped areas and vegetation. On the other hand, fixed/point sources radiate outward uniformly as it travels away from the source.

2.0 NOISE SENSITIVE LAND USES (NSLU)

2.1 Guidelines for the Determination of Significance

Project implementation will result in the exposure of any on-or off-site, existing or reasonably foreseeable future NSLU to exterior or interior noise (including noise generated from the project, together with noise from the roads [existing and planned], railroads, airports, heliports and all other noise sources) in excess of any of the following:

a) Exterior Locations:

- i. 60 dBA (CNEL); or
- ii. An increase of 10 dBA (CNEL) over pre-existing noise.

In the case of single-family residential detached NSLUs, exterior noise shall be measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum area:

- | | |
|---|---------------------|
| (1) Net lot area up to 4,000 square feet: | 400 square feet |
| (2) Net lot area 4,000 square feet to 10 acres: | 10% of net lot area |
| (3) Net lot area over 10 acres: | 1 acre |

For all other projects, exterior noise shall be measured at all exterior areas provided for group or private usable open space.

b) Interior Locations:

45 dBA (CNEL) except for the following cases:

- i. Rooms which are usually occupied only a part of the day (schools, libraries, or similar facilities); the interior one-hour average sound level due to noise outside should not exceed 50 decibels (A).
- ii. Corridors, hallways, stairwells, closets, bathrooms, or any room with a volume less than 490 cubic feet.

2.2 Potential Noise Impacts

It is expected that the primary source of noise impacts to the project site will occur from traffic noise along Interstate 15. To determine the future noise environment and impact potentials the Sound32 model first needs to be calibrated using the ambient noise measurements results. The existing conditions were modeled to compare against the noise measurements described in Section 1.3(a) of this report. Section N-5440 of the Caltrans Technical Noise Supplement

provides detailed procedures for calibrating the Sound32 traffic noise prediction model. The comparison is made to ensure that predicted traffic noise levels accurately reflect the actual measured noise levels. Section N 5460 suggests that model calibration should not be performed when calculated and measured noise levels are within 1 dBA. Differences of 3.0 to 4.0 dBA are routinely calibrated to adjust for site conditions the Sound32 model did not account for including topographic features, soft site conditions and existing structures or barriers.

During the aforementioned ambient noise measurements, traffic counts were taken using a video camera to later determine the existing vehicle mix for the model calibration. Based on the results, the existing traffic noise model utilizes a vehicle mix of 97.4% Autos, 1.6% Medium Trucks and 1.0% Heavy Trucks for Interstate 15. The future speed limit used in the analysis was 65 miles per hour (MPH) for passenger vehicles and 60 MPH for medium and heavy trucks. This is based upon the vertical alignment of the roadway and the field observations. Table 2-1 presents the roadway parameters used in the analysis including the average daily traffic volumes, vehicle speeds and the hourly traffic flow distribution (vehicle mix) for both the existing and future conditions. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks and heavy trucks for input into the Sound32 Model.

The ambient measurement location was modeled in Sound32 to compare with the noise monitoring locations presented previously in Table 1-1. The modeled existing noise level comparison is provided in Table 2-2. The model is over predicting the noise levels 0.8 dBA at monitoring location 1 and under predicting 1.6 dBA at monitoring location 2 using soft-site conditions. This over prediction is due to the prevailing topography, roadway grade changes and the distance separation from Interstate 15. Therefore, the roadway was modeled with soft site conditions for the future noise environment and no calibration factors were applied to predict a conservative worst case for the first/ground floor areas. Second floor areas were modeled using hard site conditions based upon Caltrans Protocol. The existing model input parameters for calibration and output file are provided as Attachment A to this report.

a) Potential Build Out Noise Conditions

The Buildout scenario includes the future year 2030 traffic volume forecasts provided by the County of San Diego General Plan Update Traffic Prediction and the peak hour traffic volumes as shown in Table 2-1. To assess the peak hour traffic noise conditions for Interstate 15, 10% of the ADT was utilized. Interstate 15 was modeled using a speed limit of 65 MPH for passenger vehicles and 60 MPH for medium and heavy trucks based on the vertical alignment and observed speeds during the monitoring periods. The future traffic noise model also utilizes the vehicle mix that was observed for Interstate 15.

Table 2-1: Traffic Parameters

Roadway	Year	Average Daily Traffic (ADT)	Peak Hour Volume	Modeled Speeds (MPH)	Vehicle Mix %		
					Auto	Medium Trucks	Heavy Trucks
Interstate 15	2009	113,440	11,344 ²	65/60 ¹	97.4 ²	1.6 ²	1.0 ²
	2030	244,000 ³	24,400	65/60	97.4	1.6	1.0
¹ Trucks were observed traveling at lower speeds based on the vertical alignment of the roadway. ² Vehicle Volume and Mix observed during the ambient noise measurement period. ³ Source: county of San Diego General Plan Update Traffic Prediction							

Table 2-2: Model Calibration

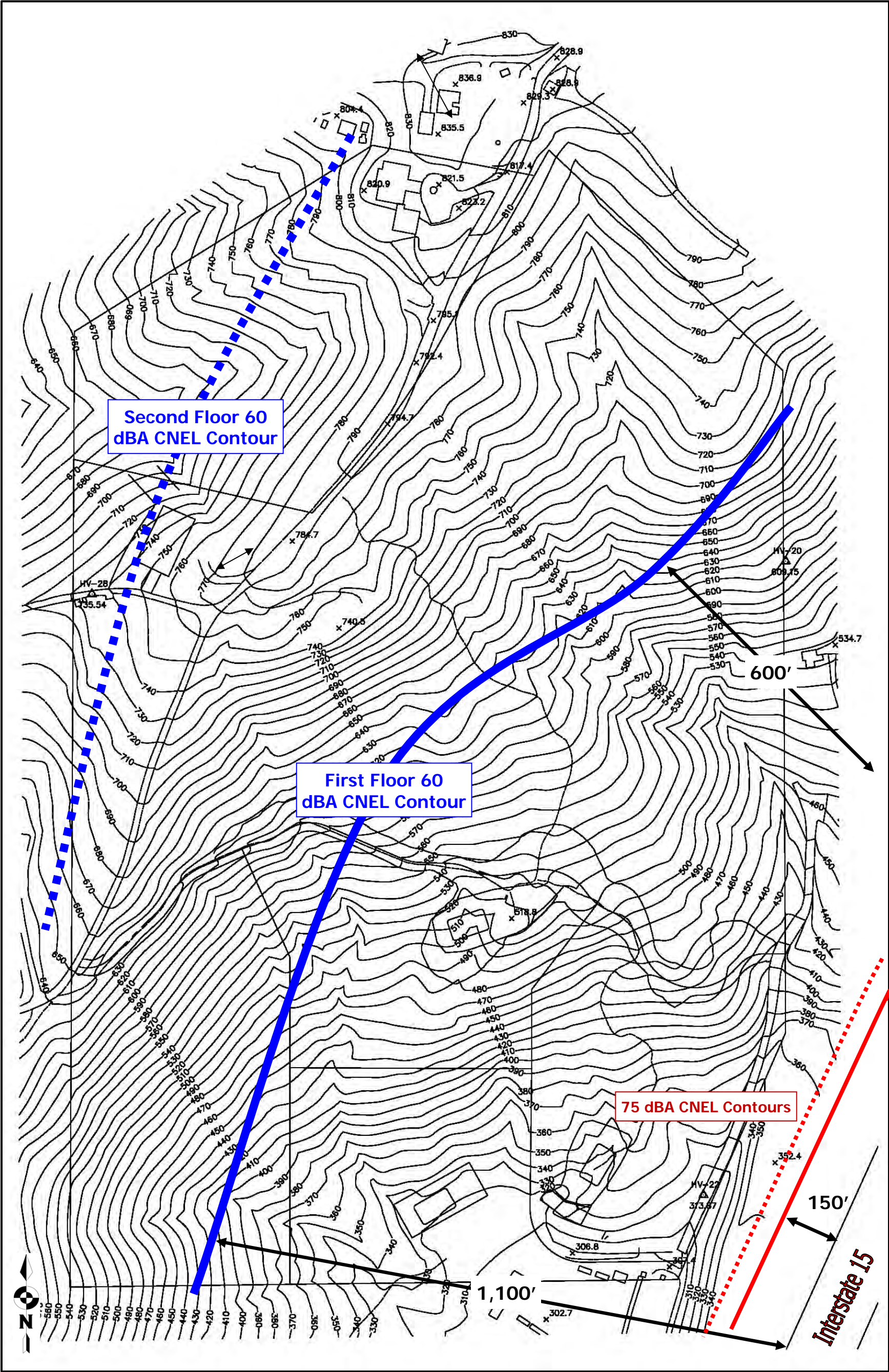
Receptor	Location	Calibration Results (dBA)		
		Measured Noise Levels	Modeled Noise Levels	Difference
ML1	~400-Feet from Interstate 15	61.2	62.0	+0.8 ¹
ML2	~1,400-Feet from Interstate 15	55.6	54.0	-1.6 ²
¹ Model is slightly over predicting based on varying vehicle speeds. ² Model is slightly under predicting based on topography and separation from the roadway.				

b) Potential Noise Impact Identification

Noise contours are lines that when drawn around a noise source indicate a continuous or equivalent level of noise exposure. Noise contour lines are generally used as a planning tool to assess potential impacts and the need for additional analysis. The noise contour lines that may affect the project site were developed for the unmitigated and unshielded future Buildout conditions. No barriers or structures were included as part of the noise contour analysis. The Sound32 traffic noise prediction model was used to calculate the noise contours perpendicular to Interstate 15. Only the natural topography and road edges, which are elevated above the travel lanes, were incorporated in the contour model to determine the worst-case future noise levels at the project site. The model input parameters and results for the first and second levels noise contours are provided in Attachment B. Figure 2-A provides the location of the future first and second floor 75 and 60 dBA CNEL noise contours.

The noise contours provided in Figure 2-A show that the 75 dBA CNEL contours are all located along the edge of roadway approximately 100 to 150 feet from the road edge.

Figure 2-A: Future Noise Contour Locations for TPM 21159



The worst-case first floor 60 dBA CNEL contour extends approximately 600 to 1,100 feet in the northern portion of the site to the southern portion of the site, respectively from Interstate 15. The second floor unshielded 60 dBA CNEL contour extends 1,600 to 2,200 feet from Interstate 15. The contours show that noise sensitive land use (NSLU) areas may exceed the County of San Diego 60 dBA CNEL exterior noise standard. Based on this finding, additional detailed exterior noise analysis was performed for Parcels 2, 3 & 4.

c) Detailed Analysis and Mitigation Measures

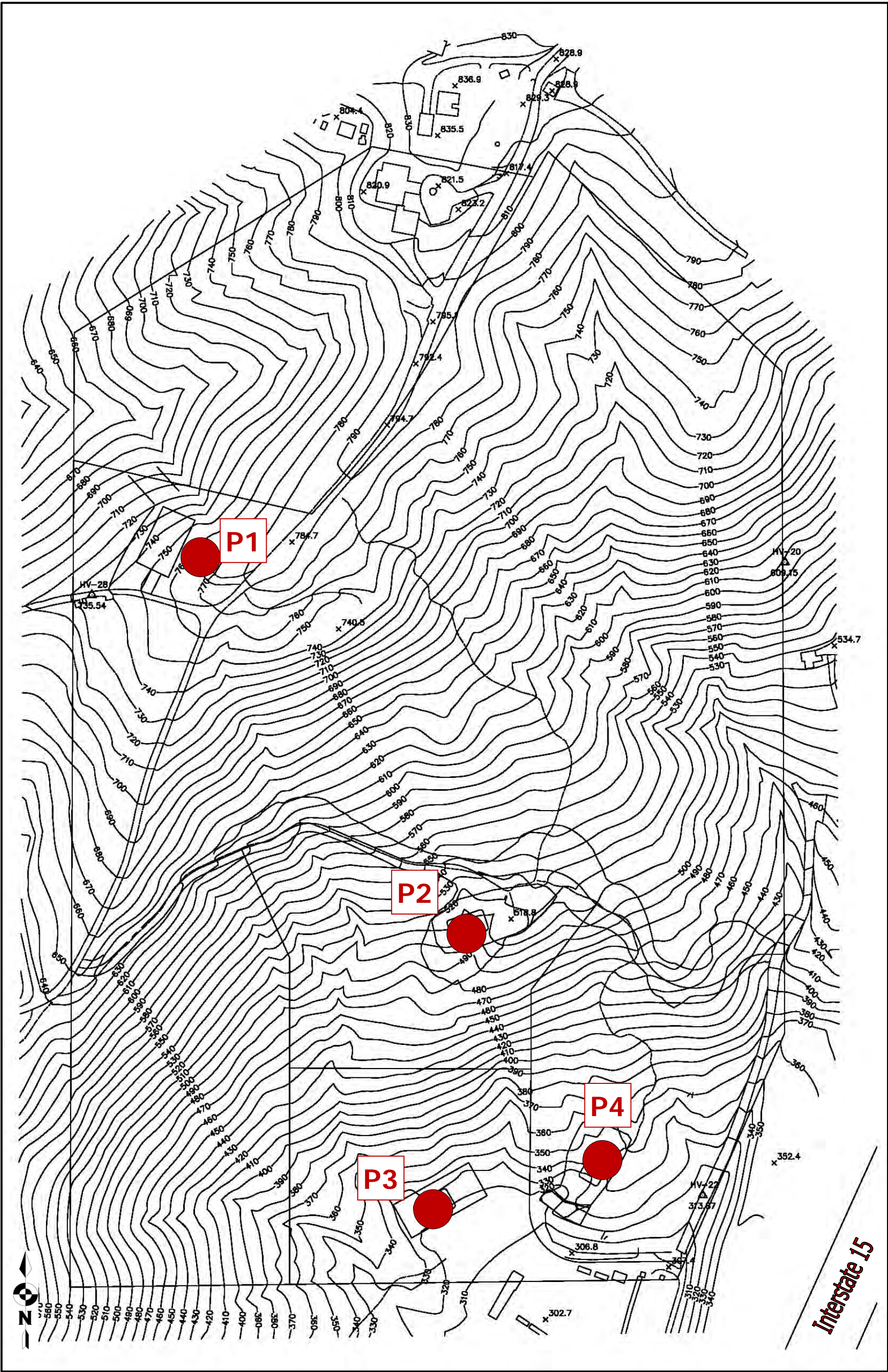
The buildout analysis was modeled assuming future Year 2030 traffic volumes of 244,000 average daily vehicles along Interstate 15 as shown previously in Table 2-1 of Section 2.2(a). The modeled observer locations for each NSLU are presented in Figure 2-B. It was determined from parcel specific analysis that the NSLU of Parcel 1 will comply with the County of San Diego 60 dBA CNEL exterior noise standard. This is due to the existing topography, proposed grading on the pads, steep slopes, and the off-set in elevation and distance between the roadway and the proposed pads. The results of the specific noise modeling are provided in Table 2-3 below. The Sound32 unmitigated first floor input and output files for future year 2030 conditions are provided in Attachment C.

Table 2-3: Future Unmitigated Exterior Noise Levels at NSLU

Receptor Number	Receptor Location	Receptor Elevation (Feet) ¹	Unmitigated First Floor Noise Levels (dBA CNEL)	Exceeds the County 60 dBA CNEL Threshold
1	Parcel 1	750.0	56	No
2	Parcel 2	530.0	62	Yes
3	Parcel 3	321.0	61	Yes
4	Parcel 4	348.0	64	Yes
¹ Receptor height is 5-Feet above the pad elevation.				

Parcels 2, 3 and 4 were found to exceed the County's 60 dBA CNEL exterior standard and mitigation measures and more detailed analysis are required. The NSLU area of Parcel 2 requires the installation of a 6-foot high barrier to reduce noise levels below the 60 dBA CNEL threshold at 10% of the net area or 17,424 square-feet for a 4 acre parcel. The 6-foot barrier for Parcel 2 can be constructed of earthen berm, a masonry block wall, ¼" thick glass or any combination of these materials. The noise affected outdoor areas at Parcels 3 and 4 require the grading of a large earthen berm to block direct line of sight to Interstate 15, details below.

Figure 2-B: Modeled Observer Locations for TPM 21159



Through detailed noise modeling and site redesign coordination with the project engineer the following mitigation measures were determined for both Parcels 3 and 4 to reduce noise levels at 10% of the net Parcel area (17,424 square-feet for 4 acres).

Parcel 4, located adjacent to Interstate 15

It was determined that a combination of lowering the pad elevation 18-feet down to 330-feet and utilizing the excess soil to create a berm starting with an elevation of 310-feet in the southern portion of the site and rising to an elevation of 364-feet and continuing north between the proposed pad and roadway would reduce noise levels below the 60 dBA CNEL thresholds at Parcel 4.

Parcel 3, located west of Parcel 4

It was determined that locating the parcel further west to increase the separation from the roadway and constructing an earthen berm along the southern portion of the lot, varying in height from 314-feet in the southeastern portion of the site to 350-feet in the southwestern portion of the site to shield noise from Interstate 15 while allowing access and drainage. The combination of the two berms for Parcels 3 and 4 are required to reduce the noise levels at Parcel 3 below the 60 dBA CNEL threshold. Therefore, the grading of both Parcel 3 and Parcel 4 berms must be completed prior to the occupancy of Parcel 3.

Exhibit 2-C on the following page shows the updated site plan for Parcels 2, 3 & 4 and provides a detailed view of the mitigation measures and top of berm heights required to mitigate transportation related noise levels at the proposed outdoor use areas. Multiple receptors were placed in each of the Parcels to determine effectiveness of the berms in providing noise shielding to 10% of the entire net lot area. The detailed modeled receptor locations for Parcels 2, 3 & 4 are provided graphically in Exhibit 2-D on Page 16. The amount of area that is mitigated to below 60 dBA CNEL is also shown on Exhibit 2-D showing compliance with the required 10%. The results of the mitigated noise sensitive use areas is provided in Table 2-4, 2-5 and 2-6 for Parcels 2, 3 and 4 respectively.

Table 2-4: Future Mitigated NSLU at Parcel 2

Receptor Number	Receptor Elevation (Feet) ¹	Unmitigated First Floor Noise Levels (dBA CNEL)	Mitigated First Floor Noise Levels (dBA CNEL)
1	535	56	56
2	535	60	58
3	535	63	60
4	535	63	60
5	535	63	60
¹ Receptor height is 5-Feet above the pad or finished ground elevation.			

Figure 2-C: Revised Site Plan & Detailed Mitigation Measures for TPM 21159

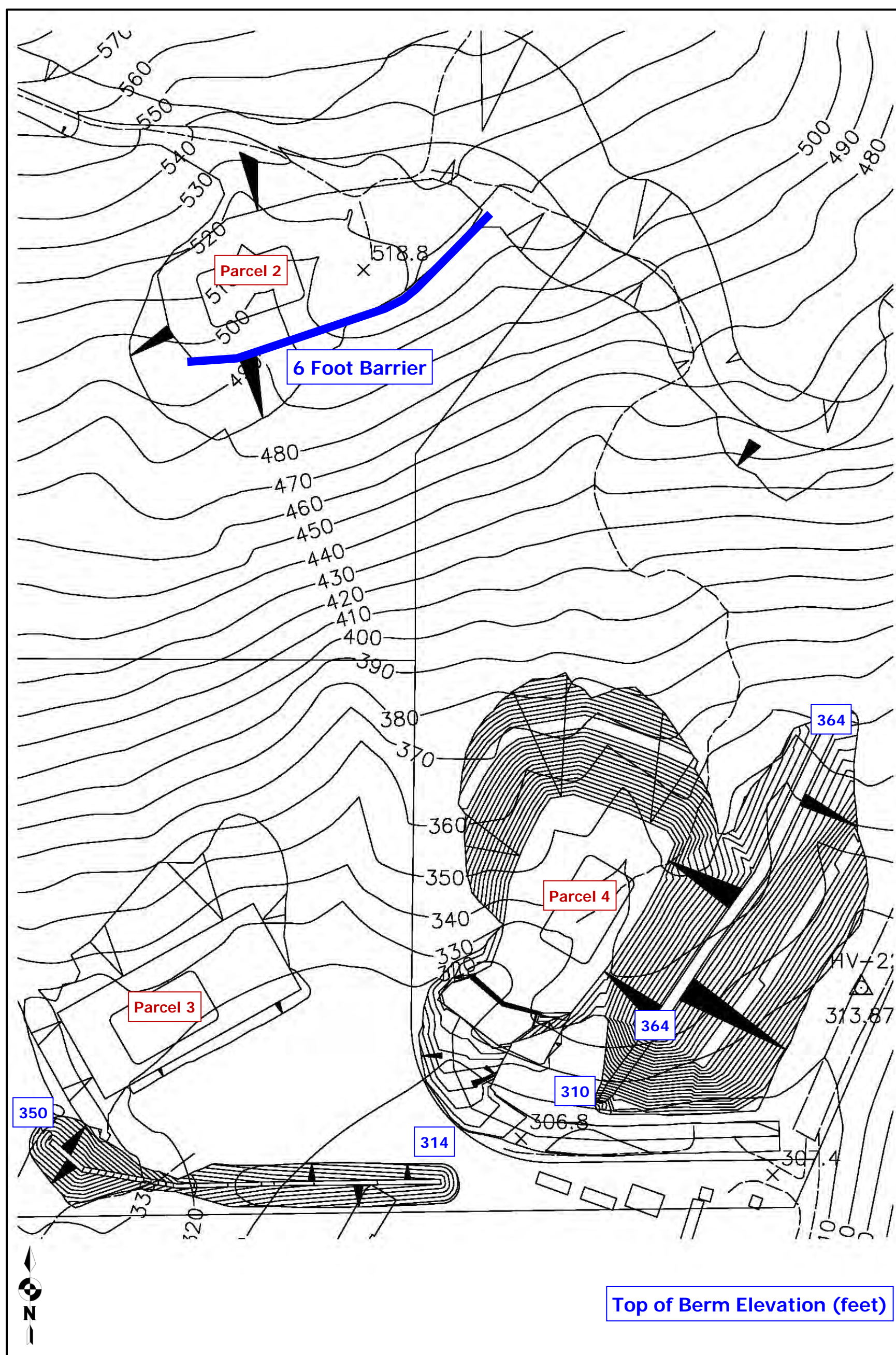


Figure 2-D: Detailed Receptor Locations and Mitigated Area for TPM 21159

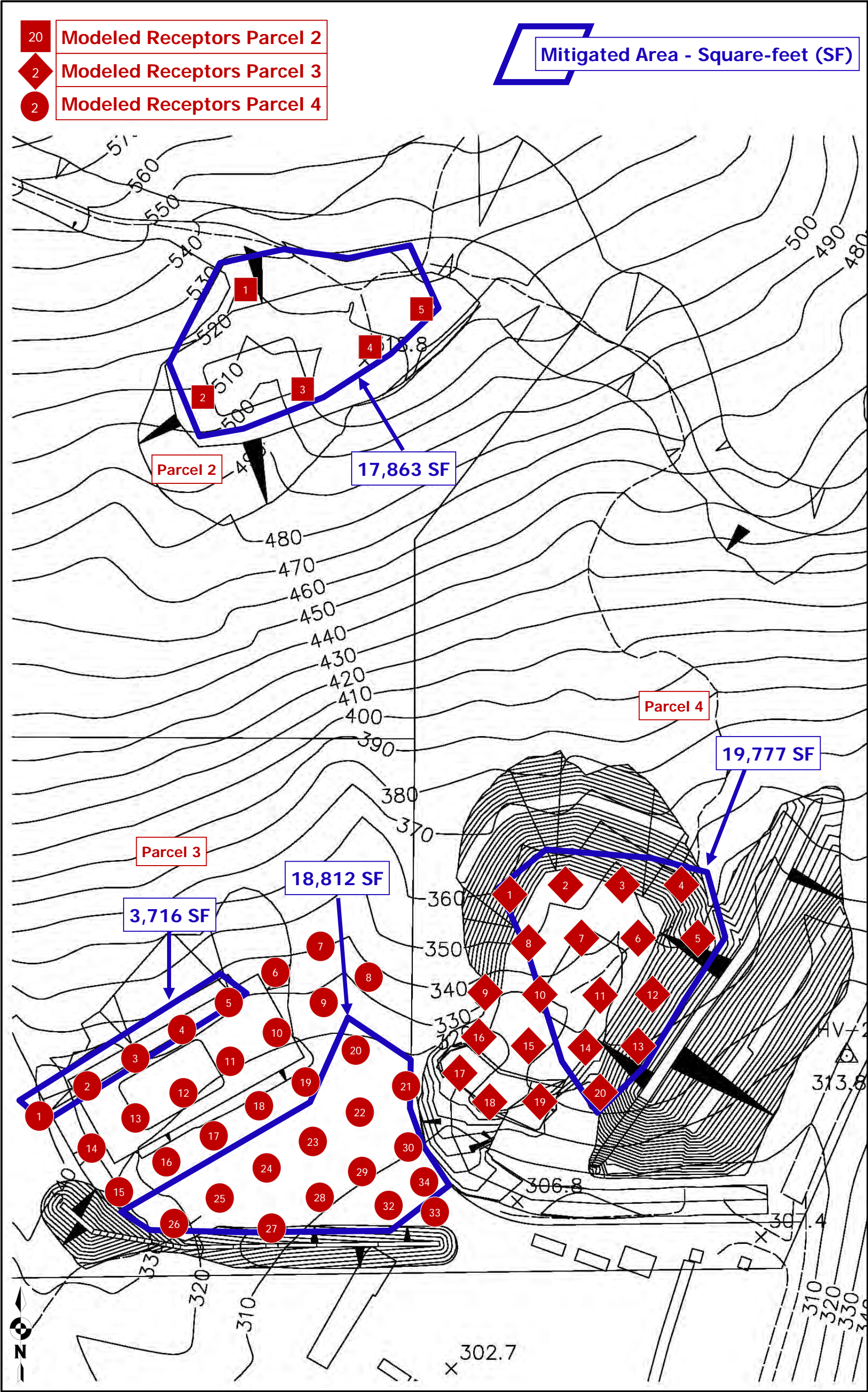


Table 2-5: Future Mitigated NSLU at Parcel 3

Receptor Number	Receptor Elevation (Feet) ¹	Unmitigated First Floor Noise Levels (dBA CNEL)	Mitigated First Floor Noise Levels (dBA CNEL)
1	331	61	60
2	327	61	60
3	327	61	60
4	327	61	60
5	327	61	60
6	335	62	61
7	335	62	61
8	335	62	61
9	331	62	60
10	327	61	61
11	327	61	61
12	327	61	61
13	327	61	61
14	327	61	61
15	329	62	61
16	329	61	61
17	321	61	61
18	321	61	61
19	321	61	61
20	321	62	60
21	321	61	60
22	310	61	59
23	309	61	59
24	309	61	59
25	309	61	58
26	309	62	60
27	319	61	57
28	307	61	58
29	306	61	59
30	306	61	60
31	306	61	60
32	306	61	59
33	306	62	61

¹ Receptor height is 5-Feet above the pad or finished ground elevation.

Table 2-6: Future Mitigated NSLU at Parcel 4

Receptor Number	Receptor Elevation (Feet) ¹	Unmitigated First Floor Noise Levels (dBA CNEL)	Mitigated First Floor Noise Levels (dBA CNEL)
1	335	62	60
2	335	63	59
3	335	63	56
4	340	64	55
5	340	64	53
6	335	63	54
7	335	63	59
8	335	63	60
9	335	63	61
10	335	63	60
11	335	63	59
12	340	64	54
13	335	64	54
14	335	64	60
15	335	63	61
16	335	63	62
17	328	63	61
18	328	63	62
19	321	63	61
20	327	63	60
¹ Receptor height is 5-Feet above the pad or finished ground elevation.			

The exterior use areas detailed Sound32 input and output files for the future year 2030 conditions are provided in Attachments D, E and F for Parcels 2, 3 and 4, respectively. The building facades of Parcels 2, 3 & 4 were found to be at or slightly above the General Plan Noise Element Standard, of 60 dBA CNEL. Therefore, interior mitigation for these parcels is required to obtain an interior level of 45 dBA CNEL. The results of the future year 2030 building façade assessment are provided in Table 2-7. The Sound32 input and output files are provided in Attachment G. It should be noted; interior noise levels of 45 dBA CNEL can easily be obtained with conventional building construction methods and the follow recommendations:

- Provide a closed window condition requiring a means of mechanical ventilation

(e.g. air conditioning) for the second floors of each Parcel.

- Provide upgraded windows for all second floors rooms.

Table 2-7: Future Building Façade Noise Levels

Receptor Number	Receptor Location	First Floor Building Façade Levels (dBA CNEL) ¹	Second Floor Building Façade Levels (dBA CNEL) ¹	Future Noise Level above 60 dBA CNEL ²
1	Parcel 1	56	56	No
2	Parcel 2	59	63	Yes
3	Parcel 3	61	62	Yes
4	Parcel 4	61	63	Yes
¹ Mitigation measures and topography are included in the model. ² If future building façade noise levels exceed 60 dBA CNEL an interior noise assessment is required.				

2.3 Conclusions

It was determined from the detailed analysis that the NSLU of Parcel 1 will comply with the County of San Diego 60 dBA CNEL exterior noise standard. This is due to the existing topography, proposed pad grading and the off-set in elevation and distance from Interstate 15 to Parcel 1.

Parcels 2, 3 and 4 were found to exceed the County of San Diego 60 dBA CNEL exterior noise standard and mitigation measures and a more detailed analysis are required. The NSLU area of Parcel 2 requires the installation of a 6-foot high barrier to reduce noise levels below the 60 dBA CNEL threshold at 10% of the net area or 17,424 square-feet for a 4 acre parcel. The 6-foot barrier for Parcel 2 can be constructed of earthen berm, a masonry block wall, ¼" thick glass or any combination of these materials. to reduce the noise levels below the 60 dBA CNEL threshold. The 6-foot high barrier for Parcel 2 can be constructed of earthen berm, a masonry block wall, ¼" thick glass or any combination of these materials.

The noise affected outdoor areas at Parcels 3 and 4 require the grading of a large earthen berm to block direct line of sight to Interstate 15. Through detailed noise modeling and site redesign coordination with the project engineer the following mitigation measures were determined for Parcels 3 and 4 to reduce noise levels at 10% of the net Parcel area (17,424 square-feet for 4 acres).

Parcel 4, located adjacent to Interstate 15

It was determined that a combination of lowering the pad elevation 18-feet down to 330-feet and utilizing the excess soil to create a berm starting with an elevation of 310 feet in the southern portion of the site and rising to an elevation of 366-feet and continuing north between the proposed pad and roadway would reduce noise levels below the 60 dBA CNEL thresholds.

Parcel 3, located west of Parcel 4

It was determined that locating the parcel further west to increase the separation from the roadway. Additionally an earthen berm will need to be constructed along the southern portion of the lot, varying in height from 314-feet in the southeastern portion of the site to 360-feet in the southwestern portion of the site to shield noise from Interstate 15 while allowing access and drainage. The combination of the two berms for Parcels 3 and 4 are required to reduce the noise levels at Parcel 3 below the 60 dBA CNEL threshold. Therefore, the grading of both Parcel 3 and Parcel 4 berms must be completed prior to the occupancy of Parcel 3.

The building facades of Parcels 2, 3 & 4 were found to be at or slightly above the General Plan Noise Element Standard, of 60 dBA CNEL. Therefore, interior mitigation for these parcels is required to obtain an interior level of 45 dBA CNEL. This report would finalize the noise requirements based upon precise grading plans and actual building design specifications.

3.0 CONSTRUCTION ACTIVITIES

3.1 Guidelines for the Determination of Significance

Construction Noise: Noise generated by construction activities related to the project will exceed the standards listed in San Diego County Code Section 36.410, Construction Equipment.

Section 36.410 states:

Except for emergency work,

- a) It shall be unlawful for any person to operate construction equipment between the hours of 7 p.m. of any day and 7 a.m. of the following day.
- b) It shall also be unlawful for any person to operate construction equipment on Sundays, and days appointed by the President, Governor, or the Board of Supervisors for a public fast, Thanksgiving, or holiday, but a person may operate construction equipment on the above-specified days between the hours of 10 a.m. and 5 p.m. at his residence or for the purpose of constructing a residence for himself, provided that the average sound level does not exceed 75 decibels during the period of operation and that the operation of construction equipment is not carried out for profit or livelihood.
- c) It shall also be unlawful to operate any construction equipment so as to cause at or beyond the property line of any property upon which a legal dwelling unit is located an average sound level greater than 75 decibels between the hours of 7 a.m. and 7 p.m.

For temporary activities, the County considers the 75 decibel (A) average to be based on a period of eight hours.

3.2 Potential Property Line Noise Impacts

a) Potential Build Out Noise Conditions

Construction noise represents a short-term impact on the ambient noise levels. Noise generated by construction equipment includes haul trucks, water trucks, graders, dozers, loaders and scrapers can reach relatively high levels. Grading activities typically represent one of the highest potential sources for noise impacts. The most effective method of controlling construction noise is through local control of construction hours and by limiting the hours of construction to normal weekday working hours.

The U.S. Environmental Protection Agency (U.S. EPA) has compiled data regarding the noise generating characteristics of specific types of construction equipment. Noise levels generated by heavy construction equipment can range from 60 dBA to in excess of 100 dBA when measured at 50 feet. However, these noise levels diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 75 dBA measured at 50 feet from the noise source to the receptor would be reduced to 69 dBA at 100 feet from the source to the receptor, and reduced to 63 dBA at 200 feet from the source.

b) Potential Noise Impact Identification

Using a point-source noise prediction model, calculations of the expected construction noise impacts were completed. The essential model input data for these performance equations include the source levels of each type of equipment, relative source to receiver horizontal and vertical separations, the amount of time the equipment is operating in a given day, also referred to as the duty-cycle and any transmission loss from topography or barriers.

According to the project applicant each Parcel will most likely be graded separately based upon economic demands. Based on the minimal amount of grading that is required for Parcels 1 and 2 to create the pad area and access roads the amount of heavy equipment needed will be minimal (i.e., D-6 dozer, and a loader). Each of these pieces of equipment have sound levels below 75 dBA Leq at a distance of 50-feet and combined will have a worst-case sound level of less than 78 dBA Leq at 50-feet. The sound level would rapidly dissipate to below the 75 dBA Leq threshold within 75-feet and based on the size of the Parcels no impacts will occur and no further analysis is needed for Parcels 3 and 4.

Parcels 3 and 4 will require more grading than Parcels 1 and 2 to create the earthen berms that are required to mitigate transportation noise sources. The anticipated amount of heavy equipment needed consists of a D-8 dozer, loader, water truck and a compactor. Based on the EPA noise emissions, empirical data and the amount of equipment needed, worst case noise impacts from this construction equipment for site preparation would occur during the grading of the earthen berms operations. Reference noise levels for each piece of equipment and the cumulative levels if all equipment is working in the same area are provided in Table 3-1 below.

As can be seen in the Table 3-1, at a distance of 85-feet the point source noise from construction activities will comply with the County of San Diego's 75 dBA standard at all project property lines. All of the grading operations for Parcel 4 will occur more than 85-feet from the southern property line with the exception of the access road and less than 20-feet of the initial grading for the berm. Not all the equipment will be utilized or staged within 85-feet and therefore no impacts are anticipated. Because the earthen berm of Parcel 4 must be

constructed prior to the occupancy of Parcel 3, no impacts will occur at Parcel 3 during the grading operations at Parcel 4.

Table 3-1: Construction Noise Levels

Construction Equipment	Quantity	Source Level @ 50-Foot (dBA)	Duty Cycle (Hours/Day)	Cumulative Noise Level @ 50-Foot (dBA)
D-8 Dozer	1	75	8	75
Compactor	1	74	8	74
Loader	1	73	8	73
Water Truck	1	70	8	70
Cumulative Levels @ 50 Feet (dBA)				79.4
Distance To Property Line				85
Noise Reduction Due To Distance				-4.6
NEAREST PROPERTY LINE NOISE LEVEL				74.8

It is anticipated that Parcel 4 will be occupied while the grading operations of Parcel 3 occur because of the requirement that the berm on Parcel 4 must be constructed prior to occupancy of Parcel 3. Therefore the grading operations at Parcel 3 have the most potential to cause impacts to the adjacent property to the south and the proposed Parcel 4 to the east. The earthen berm grading operations will occur as close as 25-feet from the adjacent southern property line and 40-feet from the eastern property line and impacts could occur. In order to determine the potential impacts to the southern and eastern property lines a more detailed grading analysis was conducted for Parcel 3.

The earthen berm grading operations for Parcel 3 are anticipated to have the same equipment listed in Table 3-1. Conversations with the project's engineer determined that while the Compactor is finishing the slope compaction only one other piece of equipment will be near the same property line. This is based on the physical constraints of having more than two pieces of equipment in the same area. Therefore, either the D-8 Dozer or the Loader will be moving soil into place or the water truck will be spraying the slopes. The worst-case noise levels would occur when the D-8 Dozer (75 dBA at 50-feet) is working with the Compactor (74 dBA at 50-feet). The cumulative noise level if both pieces of equipment are working at a distance of 25-feet from the same property line is provided in Table 3-2 below.

Table 3-2: Construction Noise Levels @ Parcel 3

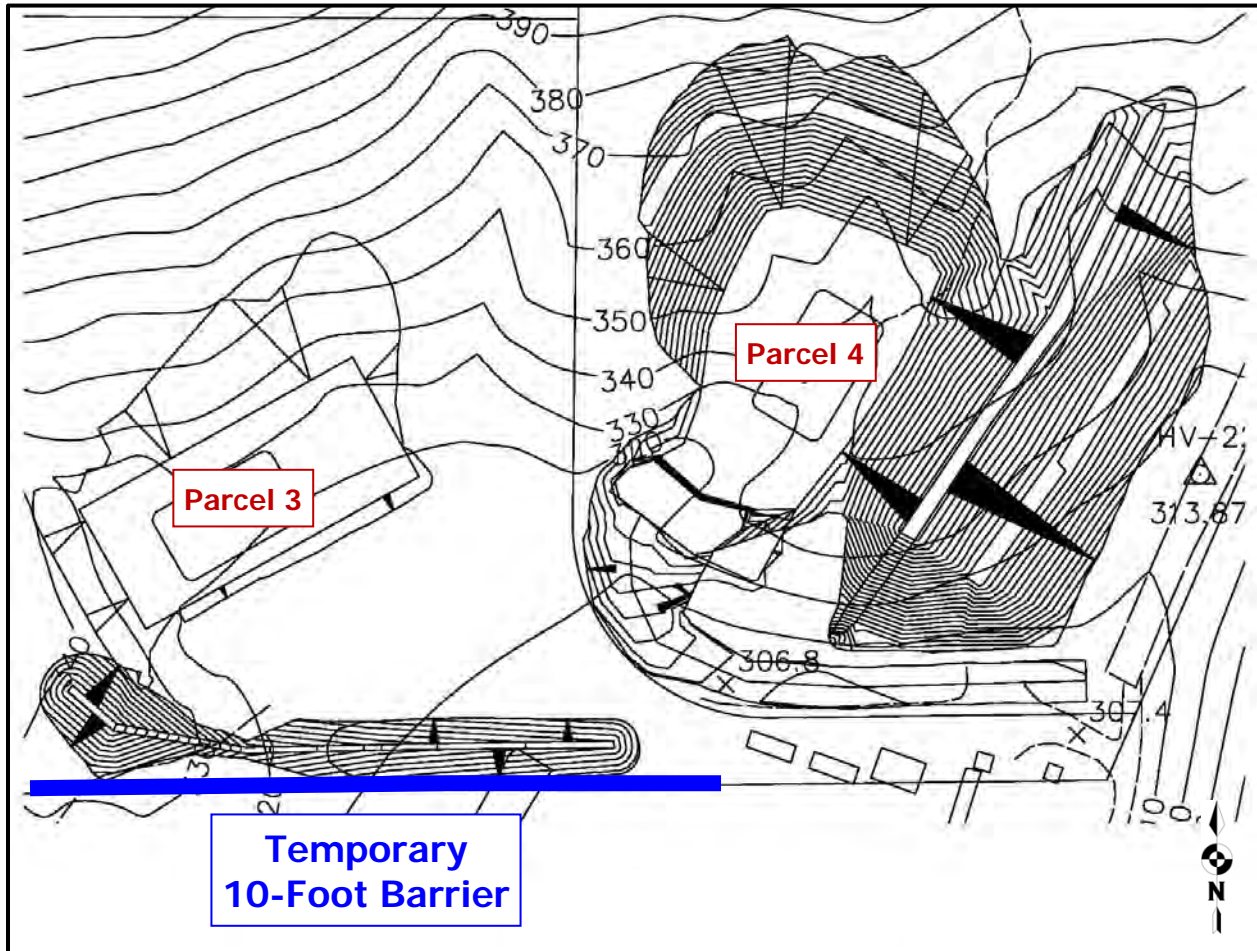
Construction Equipment	Quantity	Source Level @ 50-Foot (dBA)	Duty Cycle (Hours/Day)	Cumulative Noise Level @ 50-Foot (dBA)
D-8 Dozer	1	75	8	75
Compactor	1	74	8	74
Cumulative Levels @ 50 Feet (dBA)				77.5
Distance To Property Line				25
Noise Increase Due To Distance				+6.0
NEAREST PROPERTY LINE NOISE LEVEL				83.5

As can be seen in the Table 3-2, at a distance of 25-feet the point source noise from construction activities will exceed with the County of San Diego's 75 dBA standard at all the southern and eastern property lines. In order to reduce the grading operations noise levels the following mitigation measures options are recommended:

1. Install a 10-foot high temporary noise barrier to block the equipment noise from the nearest property line to the south when the equipment is located within 50-feet of that property line during the grading of the required berm. Once the berm is completed it will shield grading noise and the temporary barrier can be removed. The temporary barrier can be constructed of $\frac{3}{4}$ " plywood or acoustical blankets 1" thick secured to fencing. The 10-foot barrier will reduce the noise levels more than 10 dBA. The required location of the 10-foot barrier is provided in Exhibit 3-A on the following page.
2. With no noise barrier, only utilize one (1) piece of equipment at a time when working within 50-feet of the nearest property line and limit the equipment operations to 2 hours per day. The noise from one piece of equipment at 25-feet would be 81 dBA (75 dBA plus a 6 dBA increase for the reduced distance). The duty-cycle restriction will reduce the noise levels 6 dBA and the 8 hour average will be below the 75 dBA threshold.

Because of the potential short-term impacts during the grading operations at Parcel 3, it is recommended that noise monitoring be conducted during the grading operations when the equipment is needed within 50-feet of the nearest property line. The monitoring should be conducted by a County of San Diego approved acoustical consultant. Once the berm height increases and the majority of the equipment are shielded by the berm, the noise monitoring and temporary barriers will no longer be needed.

Figure 3-A: Grading Mitigation Measures for Parcel 3 - TPM 21159



3.3 Conclusions

Residential activities and single-family mechanical ventilation system operational noise levels are anticipated to comply with the County Noise Ordinance without mitigation measures.

Results of the analysis indicate that the project will meet the County of San Diego 75 dBA CNEL standard for grading activities at all the Parcels with the exception of Parcel 3. Grading operations for Parcel 3 will need to reduce the equipment usage to two hours a day or install a 10-foot high temporary barrier when grading operations are located within 50-feet of the nearest property line during the grading of the berm. In addition, noise monitoring should also be conducted by a County approved acoustical consultant when the initial grading operations are located within 50-feet of a property line.

4.0 SUMMARY OF PROJECT IMPACTS, MITIGATION & CONCLUSIONS

- On-Site Noise Analysis

This noise study has been completed to determine the noise impacts associated with the development of the proposed TPM 21159 residential project. It was determined from the detailed analysis that the NSLU of Parcel 1 will comply with the County of San Diego 60 dBA CNEL exterior noise standard. This is due to the existing topography, proposed pad grading and the off-set in elevation and distance from Interstate 15 to Parcel.

Parcel 3 and 4 were found to exceed the County of San Diego 60 dBA CNEL exterior noise standard and mitigation measures and a more detailed analysis are required. The NSLU area of Parcel 2 requires the installation of a 6-foot high barrier to reduce the noise levels below the 60 dBA CNEL threshold. The 6-foot high barrier for Parcel 2 can be constructed of earthen berm, a masonry block wall, ¼" thick glass or any combination of these materials.

The noise affected outdoor areas at Parcels 3 and 4 require the grading of a large earthen berm to block direct line of sight to Interstate 15. Through detailed noise modeling and site redesign coordination with the project engineer the following mitigation measures were determined for Parcels 3 and 4 to reduce noise levels at 10% of the net Parcel area (17,424 square-feet for 4 acres).

Parcel 4, located adjacent to Interstate 15

It was determined that a combination of lowering the pad elevation 18-feet down to 330-feet and utilizing the excess soil to create a berm starting with an elevation of 310-feet in the southern portion of the site and rising to an elevation of 364-feet and continuing north between the proposed pad and roadway would reduce noise levels below the 60 dBA CNEL thresholds.

Parcel 3, located west of Parcel 4

It was determined that locating the parcel further west to increase the separation from the roadway. Additionally an earthen berm will need to be constructed along the southern portion of the lot, varying in height from 314-feet in the southeastern portion of the site to 350-feet in the southwestern portion of the site to shield noise from Interstate 15 while allowing access and drainage. The combination of the two berms for Parcels 3 and 4 are required to reduce the noise levels at Parcel 3 below the 60 dBA CNEL threshold. Therefore, the grading of both Parcel 3 and Parcel 4 berms must be completed prior to the occupancy of Parcel 3.

The building facades of Parcels 2, 3 & 4 were found to be at or slightly above the General Plan Noise Element Standard, of 60 dBA CNEL. Therefore, interior mitigation for these parcels is required to obtain an interior level of 45 dBA CNEL. This report would finalize the noise

requirements based upon precise grading plans and actual building design specifications.

- Operational Noise Analysis

Mechanical ventilation systems for single-family dwellings operational noise levels and normal residential activities and are anticipated to comply with the County Noise Ordinance without mitigation measures.

- Construction Noise Analysis

Results of the analysis indicate that the project will meet the County of San Diego 75 dBA CNEL standard for grading activities at all the Parcels with the exception of Parcel 3 and the following mitigation measures should be considered.

Install a 10-foot high temporary noise barrier to block the equipment noise from the nearest property line to the south when the equipment is located within 50-feet of that property line during the grading of the required berm. The 10-foot barrier will reduce the noise levels more than 10 dBA.

With no noise barrier, only utilize one (1) piece of equipment at a time when working within 50-feet of the nearest property line and limit the equipment operations to 2 hours per day. The noise from one piece of equipment at 25-feet would be 81 dBA (75 dBA plus a 6 dBA increase for the reduced distance). The duty-cycle restriction will reduce the noise levels 6 dBA and the 8 hour average will be below the 75 dBA threshold. Once the berm is completed it will shield grading noise and the temporary barrier can be removed.

Because of the potential short-term impacts during the grading operations at Parcel 3, it is recommended that noise monitoring be conducted during the grading operations when the equipment is needed within 50-feet of the nearest property line. The monitoring should be conducted by a County of San Diego approved acoustical consultant. Once the berm height increases and the majority of the equipment are shielded by the berm, the noise monitoring and temporary barriers will no longer be needed.

5.0 CERTIFICATIONS

The contents of this report represent an accurate depiction of the future acoustical environment and impacts within and surrounding the TPM 21159 residential development. The report was prepared by Jeremy Loudon; a County approved CEQA Consultant for Acoustics.

DRAFT

Jeremy Loudon
Principal
Ldn Consulting, Inc.

Date June 14, 2010

ATTACHMENT A

MODEL CALIBRATION FILES

TPM 21159 - Existing Conditions

T-Peak Hour, 1

5044 , 65 , 78 , 60 , 126 , 60

T-Peak Hour, 2

5838 , 65 , 102 , 60 , 156 , 60

L-I-15 South, 1

N,2184.,587,390,

N,2057.,303,370,

N,1908.,-37,350,

N,1679.,-733,310,

N,1458.,-1697,290,

L-I-15 North, 2

N,2305.,669,390,

N,2253.,555,379,

N,2129.,281,359,

N,2004.,-44,341,

N,1775.,-740,305,

N,1554.,-1704,290,

B-Roadedge Southbound, 1 , 1 , 0 ,0

2024.,773,460,460,

2081.,487,380,380,

2020.,313,373,373,

1873.,-28,354,354,

1644.,-724,312,312,

1423.,-1688,291,291,

B-Center Median, 2 , 1 , 0 ,0

2245.,674,400,400,

2206.,585,390,390,

2082.,298,370,370,

1936.,-35,350,350,

1707.,-731,310,310,

1486.,-1695,290,290,

B-Topo - NE portion, 3 , 1 , 0 ,0

1957.,636,440,440,

1953.,829,460,460,

1949.,1164,535,535,

1787.,1550,720,720,

1808.,1787,760,760,

R, 1 , 67 ,500

1568,202,350.,ML1

R, 2 , 67 ,500

1203,1617,795.,ML2

D, 4.5

ALL,ALL

C,C

TITLE: TPM 21159 - Existing Conditions

* * * * *

	0	1	2	3	4	5	6	7
1	REC	REC	ID	DNL	PEOPLE	LEQ(CAL)		

1 ML1	67.	500.	62.0
2 ML2	67.	500.	54.0

ATTACHMENT B

FUTURE NOISE CONTOUR MODEL FILES

TPM 21159 - First Level Contours

T-Peak Hour, 1

11883 , 65 , 195 , 60 , 122 , 60

T-Peak Hour, 2

11883 , 65 , 195 , 60 , 122 , 60

L-I-15 South, 1

N,2184.,587,390,

N,2057.,303,370,

N,1908.,-37,350,

N,1679.,-733,310,

N,1458.,-1697,290,

L-I-15 North, 2

N,2305.,669,390,

N,2253.,555,379,

N,2129.,281,359,

N,2004.,-44,341,

N,1775.,-740,305,

N,1554.,-1704,290,

B-Roadedge Southbound, 1 , 1 , 0 ,0

2024.,773,460,460,

2081.,487,380,380,

2020.,313,373,373,

1873.,-28,354,354,

1644.,-724,312,312,

1423.,-1688,291,291,

B-Center Median, 2 , 1 , 0 ,0

2245.,674,400,400,

2206.,585,390,390,

2082.,298,370,370,

1936.,-35,350,350,

1707.,-731,310,310,

1486.,-1695,290,290,

B-Topo - NE portion, 3 , 1 , 0 ,0

1957.,636,440,440,

1953.,829,460,460,

1949.,1164,535,535,

1787.,1550,720,720,

1808.,1787,760,760,

R, 1 , 67 ,500

1104,-60,330.,

R, 2 , 67 ,500

1104,141,345.,

R, 3 , 67 ,500

1104,341,425.,

R, 4 , 67 ,500

1104,541,490.,

R, 5 , 67 ,500

1104,741,555.,

R, 6 , 67 ,500

1104,941,625.,

R, 7 , 67 ,500

1104,1141,705.,

R, 8 , 67 ,500

1104,1341,760.,

R, 9 , 67 ,500

1104,1541,800.,

R, 10 , 67 ,500

1104,1741,785.,

R, 11 , 67 ,500

1354,1741,760.,
R, 12 , 67 ,500
1354,1541,750.,
R, 13 , 67 ,500
1354,1341,685.,
R, 14 , 67 ,500
1354,1141,640.,
R, 15 , 67 ,500
1354,941,585.,
R, 16 , 67 ,500
1354,741,535.,
R, 17 , 67 ,500
1354,541,485.,
R, 18 , 67 ,500
1354,341,380.,
R, 19 , 67 ,500
1354,141,325.,
R, 20 , 67 ,500
1354,-60,310.,
R, 21 , 67 ,500
1604,-60,305.,
R, 22 , 67 ,500
1604,141,335.,
R, 23 , 67 ,500
1604,341,370.,
R, 24 , 67 ,500
1604,541,450.,
R, 25 , 67 ,500
1604,741,510.,
R, 26 , 67 ,500
1604,941,540.,
R, 27 , 67 ,500
1604,1141,570.,
R, 28 , 67 ,500
1604,1341,645.,
R, 29 , 67 ,500
1604,1541,725.,
R, 30 , 67 ,500
1604,1741,760.,
R, 31 , 67 ,500
1854,1741,745.,
R, 32 , 67 ,500
1854,1541,710.,
R, 33 , 67 ,500
1854,1351,625.,
R, 34 , 67 ,500
1854,1141,540.,
R, 35 , 67 ,500
1854,941,475.,
R, 36 , 67 ,500
1854,741,435.,
R, 37 , 67 ,500
1854,541,400.,
R, 38 , 67 ,500
1854,341,360.,
R, 39 , 67 ,500
1854,141,355.,
D, 4.5
ALL,ALL

C,C

SOUND32 - RELEASE 07/30/91

TITLE: TPM 21159 - First Level Contours

BARRIER DATA

BAR	BARRIER HEIGHTS							BAR		
ELE	0	1	2	3	4	5	6	7	ID	LENGTH TYPE
1	-	0.*							B1 P1	302.4 BERM
2	-	0.*							B1 P2	184.5 BERM
3	-	0.*							B1 P3	371.8 BERM
4	-	0.*							B1 P4	733.9 BERM
5	-	0.*							B1 P5	989.2 BERM
6	-	0.*							B2 P1	97.7 BERM
7	-	0.*							B2 P2	313.3 BERM
8	-	0.*							B2 P3	364.1 BERM
9	-	0.*							B2 P4	733.8 BERM
10	-	0.*							B2 P5	989.2 BERM
11	-	0.*							B3 P1	194.1 BERM
12	-	0.*							B3 P2	343.3 BERM
13	-	0.*							B3 P3	457.7 BERM
14	-	0.*							B3 P4	241.3 BERM

	0	1	2	3	4	5	6	7		

REC REC ID DNL PEOPLE LEQ(CAL)

1	R-1	67.	500.	61.8
2	R-2	67.	500.	61.2
3	R-3	67.	500.	62.1
4	R-4	67.	500.	61.7
5	R-5	67.	500.	61.2
6	R-6	67.	500.	60.3
7	R-7	67.	500.	59.2
8	R-8	67.	500.	58.1
9	R-9	67.	500.	57.0
10	R-10	67.	500.	56.0
11	R-11	67.	500.	56.6
12	R-12	67.	500.	57.8
13	R-13	67.	500.	59.0
14	R-14	67.	500.	60.3
15	R-15	67.	500.	61.6
16	R-16	67.	500.	63.0
17	R-17	67.	500.	64.0
18	R-18	67.	500.	63.0
19	R-19	67.	500.	61.8
20	R-20	67.	500.	62.3
21	R-21	67.	500.	62.8
22	R-22	67.	500.	64.1
23	R-23	67.	500.	65.1
24	R-24	67.	500.	66.3
25	R-25	67.	500.	65.0
26	R-26	67.	500.	62.9
27	R-27	67.	500.	61.1
28	R-28	67.	500.	60.0

29 R-29	67.	500.	58.5
30 R-30	67.	500.	57.2
31 R-31	67.	500.	57.6
32 R-32	67.	500.	59.1
33 R-33	67.	500.	60.8
34 R-34	67.	500.	62.2
35 R-35	67.	500.	62.1
36 R-36	67.	500.	65.0
37 R-37	67.	500.	69.4
38 R-38	67.	500.	67.3
39 R-39	67.	500.	69.6

TPM 21159 - Second Level Contours

T-Peak Hour, 1

11883 , 65 , 195 , 60 , 122 , 60

T-Peak Hour, 2

11883 , 65 , 195 , 60 , 122 , 60

L-I-15 South, 1

N,2184.,587,390,

N,2057.,303,370,

N,1908.,-37,350,

N,1679.,-733,310,

N,1458.,-1697,290,

L-I-15 North, 2

N,2305.,669,390,

N,2253.,555,379,

N,2129.,281,359,

N,2004.,-44,341,

N,1775.,-740,305,

N,1554.,-1704,290,

B-Roadedge Southbound, 1 , 1 , 0 ,0

2024.,773,460,460,

2081.,487,380,380,

2020.,313,373,373,

1873.,-28,354,354,

1644.,-724,312,312,

1423.,-1688,291,291,

B-Center Median, 2 , 1 , 0 ,0

2245.,674,400,400,

2206.,585,390,390,

2082.,298,370,370,

1936.,-35,350,350,

1707.,-731,310,310,

1486.,-1695,290,290,

B-Topo - NE portion, 3 , 1 , 0 ,0

1957.,636,440,440,

1953.,829,460,460,

1949.,1164,535,535,

1787.,1550,720,720,

1808.,1787,760,760,

R, 1 , 67 ,500

1104,-60,340.,

R, 2 , 67 ,500

1104,141,355.,

R, 3 , 67 ,500

1104,341,335.,

R, 4 , 67 ,500

1104,541,500.,

R, 5 , 67 ,500
1104,741,565.,
R, 6 , 67 ,500
1104,941,635.,
R, 7 , 67 ,500
1104,1141,715.,
R, 8 , 67 ,500
1104,1341,770.,
R, 9 , 67 ,500
1104,1541,810.,
R, 10 , 67 ,500
1104,1741,795.,
R, 11 , 67 ,500
1354,1741,770.,
R, 12 , 67 ,500
1354,1541,760.,
R, 13 , 67 ,500
1354,1341,695.,
R, 14 , 67 ,500
1354,1141,650.,
R, 15 , 67 ,500
1354,941,575.,
R, 16 , 67 ,500
1354,741,545.,
R, 17 , 67 ,500
1354,541,495.,
R, 18 , 67 ,500
1354,341,390.,
R, 19 , 67 ,500
1354,141,335.,
R, 20 , 67 ,500
1354,-60,315.,
R, 21 , 67 ,500
1604,-60,315.,
R, 22 , 67 ,500
1604,141,345.,
R, 23 , 67 ,500
1604,341,380.,
R, 24 , 67 ,500
1604,541,460.,
R, 25 , 67 ,500
1604,741,520.,
R, 26 , 67 ,500
1604,941,550.,
R, 27 , 67 ,500
1604,1141,580.,
R, 28 , 67 ,500
1604,1341,655.,
R, 29 , 67 ,500
1604,1541,735.,
R, 30 , 67 ,500
1604,1741,770.,
R, 31 , 67 ,500
1854,1741,755.,
R, 32 , 67 ,500
1854,1541,720.,
R, 33 , 67 ,500
1854,1351,635.,
R, 34 , 67 ,500

1854,1141,550.,
R, 35 , 67 ,500
1854,941,485.,
R, 36 , 67 ,500
1854,741,445.,
R, 37 , 67 ,500
1854,541,410.,
R, 38 , 67 ,500
1854,341,370.,
R, 39 , 67 ,500
1854,141,365.,
C,C

SOUND32 - RELEASE 07/30/91
TITLE: TPM 21159 - Second Level Contours

BARRIER DATA

BAR	BARRIER HEIGHTS							BAR		
ELE	0	1	2	3	4	5	6	7	ID	LENGTH TYPE

1	-	0.*							B1 P1	302.4 BERM
2	-	0.*							B1 P2	184.5 BERM
3	-	0.*							B1 P3	371.8 BERM
4	-	0.*							B1 P4	733.9 BERM
5	-	0.*							B1 P5	989.2 BERM
6	-	0.*							B2 P1	97.7 BERM
7	-	0.*							B2 P2	313.3 BERM
8	-	0.*							B2 P3	364.1 BERM
9	-	0.*							B2 P4	733.8 BERM
10	-	0.*							B2 P5	989.2 BERM
11	-	0.*							B3 P1	194.1 BERM
12	-	0.*							B3 P2	343.3 BERM
13	-	0.*							B3 P3	457.7 BERM
14	-	0.*							B3 P4	241.3 BERM

	0	1	2	3	4	5	6	7		

REC REC ID DNL PEOPLE LEQ(CAL)

1	R-1	67.	500.	63.0
2	R-2	67.	500.	62.4
3	R-3	67.	500.	60.2
4	R-4	67.	500.	65.6
5	R-5	67.	500.	65.8
6	R-6	67.	500.	66.2
7	R-7	67.	500.	65.9
8	R-8	67.	500.	65.1
9	R-9	67.	500.	64.3
10	R-10	67.	500.	63.0
11	R-11	67.	500.	63.7
12	R-12	67.	500.	64.8
13	R-13	67.	500.	65.5
14	R-14	67.	500.	66.5
15	R-15	67.	500.	66.2
16	R-16	67.	500.	67.6
17	R-17	67.	500.	67.9

18	R-18	67.	500.	64.4
19	R-19	67.	500.	62.8
20	R-20	67.	500.	62.8
21	R-21	67.	500.	63.9
22	R-22	67.	500.	65.2
23	R-23	67.	500.	66.6
24	R-24	67.	500.	69.8
25	R-25	67.	500.	69.8
26	R-26	67.	500.	67.9
27	R-27	67.	500.	66.3
28	R-28	67.	500.	66.3
29	R-29	67.	500.	65.8
30	R-30	67.	500.	64.7
31	R-31	67.	500.	65.4
32	R-32	67.	500.	66.5
33	R-33	67.	500.	67.6
34	R-34	67.	500.	67.9
35	R-35	67.	500.	65.9
36	R-36	67.	500.	68.5
37	R-37	67.	500.	72.5
38	R-38	67.	500.	69.1
39	R-39	67.	500.	72.9

ATTACHMENT C

UNMITIGATED FUTURE NOISE SENSITIVE
LAND USES MODEL FILES

TPM 21159 - First Level Unmitigated

T-Peak Hour, 1

11883 , 65 , 195 , 60 , 122 , 60

T-Peak Hour, 2

11883 , 65 , 195 , 60 , 122 , 60

L-I-15 South, 1

N,2184.,587,390,

N,2057.,303,370,

N,1908.,-37,350,

N,1679.,-733,310,

N,1458.,-1697,290,

L-I-15 North, 2

N,2305.,669,390,

N,2253.,555,379,

N,2129.,281,359,

N,2004.,-44,341,

N,1775.,-740,305,

N,1554.,-1704,290,

B-Roadedge Southbound, 1 , 1 , 0 ,0

2024.,773,460,460,

2081.,487,380,380,

2020.,313,373,373,

1873.,-28,354,354,

1644.,-724,312,312,

1423.,-1688,291,291,

B-Center Median, 2 , 1 , 0 ,0

2245.,674,400,400,

2206.,585,390,390,

2082.,298,370,370,

1936.,-35,350,350,

1707.,-731,310,310,

1486.,-1695,290,290,

B-Topo - NE portion, 3 , 1 , 0 ,0

1957.,636,440,440,

1953.,829,460,460,

1949.,1164,535,535,

1787.,1550,720,720,

1808.,1787,760,760,

B-Parcel 2 edge, 4 , 1 , 0 ,0

1228.,595,530,530,

1260.,598,530,530,

1363.,634,530,530,

1435.,700,530,530,

R, 1 , 67 ,500

701,1350,750.,P1

R, 2 , 67 ,500

1266,620,535.,P2

R, 3 , 67 ,500

1237,135,326.,P3

R, 4 , 67 ,500

1553,249,353.,P4

D, 4:5

ALL,ALL

C,C

TITLE: TPM 21159 - First Level Unmitigated

* * * * *

1

1	P1	67.	500.	56.4
2	P2	67.	500.	62.2
3	P3	67.	500.	61.3
4	P4	67.	500.	64.3

ATTACHMENT D

PARCEL 2 DETAILED NOISE SENSITIVE LAND
USES MODEL FILES

TPM 21159 - Parcel 2 - First Level Unmitigated

T-Peak Hour, 1

11883 , 65 , 195 , 60 , 122 , 60

T-Peak Hour, 2

11883 , 65 , 195 , 60 , 122 , 60

L-I-15 South, 1

N,2174.,587,390,

N,2047.,303,370,

N,1898.,-37,350,

N,1669.,-733,310,

N,1448.,-1697,290,

L-I-15 North, 2

N,2697.,1392,425,

N,2325.,669,390,

N,2273.,555,379,

N,2149.,281,359,

N,2024.,-44,341,

N,1795.,-740,305,

N,1574.,-1704,290,

B-Roadedge Southbound, 1 , 1 , 0 ,0

2024.,773,460,460,

2081.,487,380,380,

2020.,313,373,373,

1873.,-28,354,354,

1644.,-724,312,312,

1423.,-1688,291,291,

B-Center Median, 2 , 1 , 0 ,0

2245.,674,400,400,

2206.,585,390,390,

2082.,298,370,370,

1936.,-35,350,350,

1707.,-731,310,310,

1486.,-1695,290,290,

B-Topo - NE portion, 3 , 1 , 0 ,0

1957.,636,440,440,

1953.,829,460,460,

1949.,1164,535,535,

1787.,1550,720,720,

1808.,1787,760,760,

B-Parcel 2 edge, 4 , 1 , 0 ,0

1228.,595,530,530,

1260.,598,530,530,

1363.,634,530,530,

1435.,700,530,530,

1416.,720,530,530,

B-Parcel 4 berm, 5 , 1 , 0 ,0

1520.,58,310,310,

1558.,111,364,364,

1635.,223,364,364,

1691.,340,364,364,

1645.,560,456,456,

B-Parcel 3 berm, 6 , 1 , 0 ,0

1150.,18,350,350,

1202.,9,330,330,

1270.,8,320,320,

1404.,10,314,314,

R, 1 , 67 ,500

1263,711,535.,

R, 2 , 67 ,500

1231,631,535.,

R, 3 , 67 ,500

1306,636,535.,

R, 4 , 67 ,500

1355,667,535.,

R, 5 , 67 ,500

1390,697,535.,

D, 4.5

ALL,ALL

C,C

SOUND32 - RELEASE 07/30/91
 TITLE: TPM 21159 - Parcel 2 - First Level Unmitigated

BARRIER DATA

BAR	BARRIER HEIGHTS							BAR	LENGTH	TYPE
ELE	0	1	2	3	4	5	6	7		
1	-	0.*						B1 P1	302.4	BERM
2	-	0.*						B1 P2	184.5	BERM
3	-	0.*						B1 P3	371.8	BERM
4	-	0.*						B1 P4	733.9	BERM
5	-	0.*						B1 P5	989.2	BERM
6	-	0.*						B2 P1	97.7	BERM
7	-	0.*						B2 P2	313.3	BERM
8	-	0.*						B2 P3	364.1	BERM
9	-	0.*						B2 P4	733.8	BERM
10	-	0.*						B2 P5	989.2	BERM
11	-	0.*						B3 P1	194.1	BERM
12	-	0.*						B3 P2	343.3	BERM
13	-	0.*						B3 P3	457.7	BERM
14	-	0.*						B3 P4	241.3	BERM
15	-	0.*						B4 P1	32.1	BERM
16	-	0.*						B4 P2	109.1	BERM
17	-	0.*						B4 P3	97.7	BERM
18	-	0.*						B4 P4	27.6	BERM
19	-	0.*						B5 P1	84.7	BERM
20	-	0.*						B5 P2	135.9	BERM
21	-	0.*						B5 P3	129.7	BERM
22	-	0.*						B5 P4	242.9	BERM
23	-	0.*						B6 P1	56.4	BERM
24	-	0.*						B6 P2	68.7	BERM
25	-	0.*						B6 P3	134.1	BERM

	0	1	2	3	4	5	6	7		

REC REC ID DNL PEOPLE LEQ(CAL)

1	R-1	67.	500.	56.0
2	R-2	67.	500.	60.0
3	R-3	67.	500.	62.6
4	R-4	67.	500.	62.7
5	R-5	67.	500.	62.9

TPM 21159 - Parcel 2 - First Level Mitigated

T-Peak Hour, 1
 11883 , 65 , 195 , 60 , 122 , 60

T-Peak Hour, 2
 11883 , 65 , 195 , 60 , 122 , 60

L-I-15 South, 1
 N,2174.,587,390,
 N,2047.,303,370,
 N,1898.,-37,350,
 N,1669.,-733,310,
 N,1448.,-1697,290,

L-I-15 North, 2
 N,2697.,1392,425,
 N,2325.,669,390,
 N,2273.,555,379,
 N,2149.,281,359,
 N,2024.,-44,341,
 N,1795.,-740,305,
 N,1574.,-1704,290,

B-Roadedge Southbound, 1 , 1 , 0 ,0
 2024.,773,460,460,

BAR ELE	BARRIER HEIGHTS									ID	BAR	
	0	1	2	3	4	5	6	7	LENGTH		TYPE	
1	-	0.*								B1 P1	302.4	BERM
2	-	0.*								B1 P2	184.5	BERM
3	-	0.*								B1 P3	371.8	BERM
4	-	0.*								B1 P4	733.9	BERM
5	-	0.*								B1 P5	989.2	BERM
6	-	0.*								B2 P1	97.7	BERM
7	-	0.*								B2 P2	313.3	BERM
8	-	0.*								B2 P3	364.1	BERM
9	-	0.*								B2 P4	733.8	BERM
10	-	0.*								B2 P5	989.2	BERM
11	-	0.*								B3 P1	194.1	BERM

12	-	0.*	B3 P2	343.3	BERM
13	-	0.*	B3 P3	457.7	BERM
14	-	0.*	B3 P4	241.3	BERM
15	-	6.*	B4 P1	32.1	MASONRY
16	-	6.*	B4 P2	109.1	MASONRY
17	-	6.*	B4 P3	97.7	MASONRY
18	-	6.*	B4 P4	27.6	MASONRY
19	-	0.*	B5 P1	84.7	BERM
20	-	0.*	B5 P2	135.9	BERM
21	-	0.*	B5 P3	129.7	BERM
22	-	0.*	B5 P4	242.9	BERM
23	-	0.*	B6 P1	56.4	BERM
24	-	0.*	B6 P2	68.7	BERM
25	-	0.*	B6 P3	134.1	BERM

	0	1	2	3	4	5	6	7
1								

REC	REC ID	DNL	PEOPLE	LEQ(CAL)

1	R-1	67.	500.	56.0
2	R-2	67.	500.	58.1
3	R-3	67.	500.	60.0
4	R-4	67.	500.	59.8
5	R-5	67.	500.	60.1

ATTACHMENT E

PARCEL 3 DETAILED NOISE SENSITIVE LAND
USES MODEL FILES

TPM 21159 - Parcel 3 - First Level Unmitigated

T-Peak Hour, 1

11883 , 65 , 195 , 60 , 122 , 60

T-Peak Hour, 2

11883 , 65 , 195 , 60 , 122 , 60

L-I-15 South, 1

N,2184.,587,390,

N,2057.,303,370,

N,1908.,-37,350,

N,1679.,-733,310,

N,1458.,-1697,290,

L-I-15 North, 2

N,2305.,669,390,

N,2253.,555,379,

N,2129.,281,359,

N,2004.,-44,341,

N,1775.,-740,305,

N,1554.,-1704,290,

B-Roadedge Southbound, 1 , 1 , 0 ,0

2024.,773,460,460,

2081.,487,380,380,

2020.,313,373,373,

1873.,-28,354,354,

1644.,-724,312,312,

1423.,-1688,291,291,

B-Center Median, 2 , 1 , 0 ,0

2245.,674,400,400,

2206.,585,390,390,

2082.,298,370,370,

1936.,-35,350,350,

1707.,-731,310,310,

1486.,-1695,290,290,

B-Topo - NE portion, 3 , 1 , 0 ,0

1957.,636,440,440,

1953.,829,460,460,

1949.,1164,535,535,

1787.,1550,720,720,

1808.,1787,760,760,

R, 1 , 67 ,500

1112,105,331.,

R, 2 , 67 ,500

1146,125,327.,

R, 3 , 67 ,500

1180,146,327.,

R, 4 , 67 ,500

1215,167,327.,

R, 5 , 67 ,500

1249,188,327.,

R, 6 , 67 ,500

1283,209,335.,

R, 7 , 67 ,500

1317,230,335.,

R, 8 , 67 ,500

1355,206,331.,

R, 9 , 67 ,500

1320,186,327.,

R, 10 , 67 ,500

1286,165,327.,

R, 11 , 67 ,500

1252,143,327.,
R, 12 , 67 ,500
1218,123,327.,
R, 13 , 67 ,500
1185,102,327.,
R, 14 , 67 ,500
1150,80,329.,
R, 15 , 67 ,500
1170,46,329.,
R, 16 , 67 ,500
1205,67,321.,
R, 17 , 67 ,500
1239,89,321.,
R, 18 , 67 ,500
1273,110,321.,
R, 19 , 67 ,500
1308,130,321.,
R, 20 , 67 ,500
1342,151,321.,
R, 21 , 67 ,500
1380,128,310.,
R, 22 , 67 ,500
1348,107,309.,
R, 23 , 67 ,500
1311,86,309.,
R, 24 , 67 ,500
1278,65,309.,
R, 25 , 67 ,500
1243,43,309.,
R, 26 , 67 ,500
1209,24,319.,
R, 27 , 67 ,500
1280,21,307.,
R, 28 , 67 ,500
1315,42,306.,
R, 29 , 67 ,500
1348,63,306.,
R, 30 , 67 ,500
1384,83,306.,
R, 31 , 67 ,500
1395,54,306.,
R, 32 , 67 ,500
1368,38,306.,
R, 33 , 67 ,500
1402,32,306.,
D, 4.5
ALL,ALL
C,C

SOUND32 - RELEASE 07/30/91

TITLE: TPM 21159 - Parcel 3 - First Level Unmitigated

BARRIER DATA

BAR		BARRIER HEIGHTS							BAR	
ELE	0	1	2	3	4	5	6	7	ID	LENGTH TYPE
1	-	0.*							B1 P1	302.4 BERM
2	-	0.*							B1 P2	184.5 BERM
3	-	0.*							B1 P3	371.8 BERM
4	-	0.*							B1 P4	733.9 BERM
5	-	0.*							B1 P5	989.2 BERM
6	-	0.*							B2 P1	97.7 BERM
7	-	0.*							B2 P2	313.3 BERM
8	-	0.*							B2 P3	364.1 BERM
9	-	0.*							B2 P4	733.8 BERM
10	-	0.*							B2 P5	989.2 BERM
11	-	0.*							B3 P1	194.1 BERM
12	-	0.*							B3 P2	343.3 BERM
13	-	0.*							B3 P3	457.7 BERM
14	-	0.*							B3 P4	241.3 BERM

0 1 2 3 4 5 6 7

REC REC ID DNL PEOPLE LEQ(CAL)

1	R-1	67.	500.	60.9
2	R-2	67.	500.	60.8
3	R-3	67.	500.	60.9
4	R-4	67.	500.	61.0
5	R-5	67.	500.	61.0
6	R-6	67.	500.	61.5
7	R-7	67.	500.	61.6
8	R-8	67.	500.	61.7
9	R-9	67.	500.	61.5
10	R-10	67.	500.	61.4
11	R-11	67.	500.	61.4
12	R-12	67.	500.	61.3
13	R-13	67.	500.	61.2
14	R-14	67.	500.	61.2
15	R-15	67.	500.	61.5
16	R-16	67.	500.	61.3
17	R-17	67.	500.	61.3
18	R-18	67.	500.	61.4
19	R-19	67.	500.	61.4
20	R-20	67.	500.	61.5
21	R-21	67.	500.	61.1
22	R-22	67.	500.	61.1
23	R-23	67.	500.	61.0
24	R-24	67.	500.	61.0
25	R-25	67.	500.	61.0
26	R-26	67.	500.	61.5
27	R-27	67.	500.	61.2
28	R-28	67.	500.	61.2
29	R-29	67.	500.	61.2
30	R-30	67.	500.	61.2

31	R-31	67.	500.	61.4
32	R-32	67.	500.	61.4
33	R-33	67.	500.	61.6

TPM 21159 - Parcel 3 - First Level Mitigated

T-Peak Hour, 1

11883 , 65 , 195 , 60 , 122 , 60

T-Peak Hour, 2

11883 , 65 , 195 , 60 , 122 , 60

L-I-15 South, 1

N,2184.,587,390,

N,2057.,303,370,

N,1908.,-37,350,

N,1679.,-733,310,

N,1458.,-1697,290,

L-I-15 North, 2

N,2305.,669,390,

N,2253.,555,379,

N,2129.,281,359,

N,2004.,-44,341,

N,1775.,-740,305,

N,1554.,-1704,290,

B-Roadedge Southbound, 1 , 1 , 0 ,0

2024.,773,460,460,

2081.,487,380,380,

2020.,313,373,373,

1873.,-28,354,354,

1644.,-724,312,312,

1423.,-1688,291,291,

B-Center Median, 2 , 1 , 0 ,0

2245.,674,400,400,

2206.,585,390,390,

2082.,298,370,370,

1936.,-35,350,350,

1707.,-731,310,310,

1486.,-1695,290,290,

B-Topo - NE portion, 3 , 1 , 0 ,0

1957.,636,440,440,

1953.,829,460,460,

1949.,1164,535,535,

1787.,1550,720,720,

1808.,1787,760,760,

B-Parcel 4 berm, 4 , 1 , 0 ,0

1520.,58,310,310,

1558.,111,364,364,

1635.,223,364,364,

1691.,340,364,364,

1645.,560,456,456,

B-Parcel 3 berm, 5 , 1 , 0 ,0

1126.,38,350,350,

1150.,19,350,350,

1114.,8,326,326,

1277.,8,320,320,

1404.,10,314,314,

R, 1 , 67 ,500

1112,105,331.,

R, 2 , 67 ,500

1146,125,327.,

R, 3 , 67 ,500
1180,146,327.,
R, 4 , 67 ,500
1215,167,327.,
R, 5 , 67 ,500
1249,188,327.,
R, 6 , 67 ,500
1283,209,335.,
R, 7 , 67 ,500
1317,230,335.,
R, 8 , 67 ,500
1355,206,331.,
R, 9 , 67 ,500
1320,186,327.,
R, 10 , 67 ,500
1286,165,327.,
R, 11 , 67 ,500
1252,143,327.,
R, 12 , 67 ,500
1218,123,327.,
R, 13 , 67 ,500
1185,102,327.,
R, 14 , 67 ,500
1150,80,329.,
R, 15 , 67 ,500
1170,46,329.,
R, 16 , 67 ,500
1205,67,321.,
R, 17 , 67 ,500
1239,89,321.,
R, 18 , 67 ,500
1273,110,321.,
R, 19 , 67 ,500
1308,130,321.,
R, 20 , 67 ,500
1342,151,321.,
R, 21 , 67 ,500
1380,128,310.,
R, 22 , 67 ,500
1348,107,309.,
R, 23 , 67 ,500
1311,86,309.,
R, 24 , 67 ,500
1278,65,309.,
R, 25 , 67 ,500
1243,43,309.,
R, 26 , 67 ,500
1209,24,319.,
R, 27 , 67 ,500
1280,21,307.,
R, 28 , 67 ,500
1315,42,306.,
R, 29 , 67 ,500
1348,63,306.,
R, 30 , 67 ,500
1384,83,306.,
R, 31 , 67 ,500
1395,54,306.,
R, 32 , 67 ,500

1368,38,306.,
R, 33 , 67 ,500
1402,32,306.,
D, 4.5
ALL,ALL
C,C

SOUND32 - RELEASE 07/30/91
TITLE: TPM 21159 - Parcel 3 - First Level Mitigated

BARRIER DATA

BAR	BARRIER HEIGHTS							BAR			
ELE	0	1	2	3	4	5	6	7	ID	LENGTH	TYPE

1	-	0.*							B1 P1	302.4	BERM
2	-	0.*							B1 P2	184.5	BERM
3	-	0.*							B1 P3	371.8	BERM
4	-	0.*							B1 P4	733.9	BERM
5	-	0.*							B1 P5	989.2	BERM
6	-	0.*							B2 P1	97.7	BERM
7	-	0.*							B2 P2	313.3	BERM
8	-	0.*							B2 P3	364.1	BERM
9	-	0.*							B2 P4	733.8	BERM
10	-	0.*							B2 P5	989.2	BERM
11	-	0.*							B3 P1	194.1	BERM
12	-	0.*							B3 P2	343.3	BERM
13	-	0.*							B3 P3	457.7	BERM
14	-	0.*							B3 P4	241.3	BERM
15	-	0.*							B4 P1	84.7	BERM
16	-	0.*							B4 P2	135.9	BERM
17	-	0.*							B4 P3	129.7	BERM
18	-	0.*							B4 P4	242.9	BERM
19	-	0.*							B5 P1	30.6	BERM
20	-	0.*							B5 P2	44.6	BERM
21	-	0.*							B5 P3	163.1	BERM
22	-	0.*							B5 P4	127.2	BERM

	0	1	2	3	4	5	6	7			

REC REC ID DNL PEOPLE LEQ(CAL)

1	R-1	67.	500.	59.8
2	R-2	67.	500.	60.4
3	R-3	67.	500.	60.4
4	R-4	67.	500.	60.4
5	R-5	67.	500.	60.3
6	R-6	67.	500.	60.8
7	R-7	67.	500.	60.7
8	R-8	67.	500.	60.5
9	R-9	67.	500.	60.4
10	R-10	67.	500.	60.6
11	R-11	67.	500.	60.7
12	R-12	67.	500.	60.7

13	R-13	67.	500.	60.8
14	R-14	67.	500.	60.9
15	R-15	67.	500.	61.2
16	R-16	67.	500.	60.8
17	R-17	67.	500.	60.7
18	R-18	67.	500.	60.6
19	R-19	67.	500.	60.5
20	R-20	67.	500.	60.3
21	R-21	67.	500.	59.8
22	R-22	67.	500.	59.4
23	R-23	67.	500.	59.1
24	R-24	67.	500.	58.6
25	R-25	67.	500.	57.5
26	R-26	67.	500.	60.1
27	R-27	67.	500.	56.8
28	R-28	67.	500.	57.8
29	R-29	67.	500.	58.8
30	R-30	67.	500.	59.5
31	R-31	67.	500.	60.0
32	R-32	67.	500.	58.7
33	R-33	67.	500.	60.9

ATTACHMENT F

PARCEL 4 DETAILED NOISE SENSITIVE LAND
USES MODEL FILES

TPM 21159 - Parcel 4 - First Level Unmitigated

T-Peak Hour, 1

11883 , 65 , 195 , 60 , 122 , 60

T-Peak Hour, 2

11883 , 65 , 195 , 60 , 122 , 60

L-I-15 South, 1

N,2174.,587,390,

N,2047.,303,370,

N,1898.,-37,350,

N,1669.,-733,310,

N,1448.,-1697,290,

L-I-15 North, 2

N,2697.,1392,425,

N,2325.,669,390,

N,2273.,555,379,

N,2149.,281,359,

N,2024.,-44,341,

N,1795.,-740,305,

N,1574.,-1704,290,

B-Roadedge Southbound, 1 , 1 , 0 ,0

2024.,773,460,460,

2081.,487,380,380,

2020.,313,373,373,

1873.,-28,354,354,

1644.,-724,312,312,

1423.,-1688,291,291,

B-Center Median, 2 , 1 , 0 ,0

2245.,674,400,400,

2206.,585,390,390,

2082.,298,370,370,

1936.,-35,350,350,

1707.,-731,310,310,

1486.,-1695,290,290,

B-Topo - NE portion, 3 , 1 , 0 ,0

1957.,636,440,440,

1953.,829,460,460,

1949.,1164,535,535,

1787.,1550,720,720,

1808.,1787,760,760,

R, 1 , 67 ,500

1457,271,335.,

R, 2 , 67 ,500

1500,273,335.,

R, 3 , 67 ,500

1540,275,335.,

R, 4 , 67 ,500

1582,275,340.,

R, 5 , 67 ,500

1593,235,340.,

R, 6 , 67 ,500

1551,235,335.,

R, 7 , 67 ,500

1510,234,335.,

R, 8 , 67 ,500

1467,232,335.,

R, 9 , 67 ,500

1436,190,335.,

R, 10 , 67 ,500

1478,192,335.,

R, 11 , 67 ,500
 1520,194,335.,
 R, 12 , 67 ,500
 1561,195,340.,
 R, 13 , 67 ,500
 1550,155,335.,
 R, 14 , 67 ,500
 1509,153,335.,
 R, 15 , 67 ,500
 1467,152,335.,
 R, 16 , 67 ,500
 1428,157,335.,
 R, 17 , 67 ,500
 1420,130,328.,
 R, 18 , 67 ,500
 1437,114,328.,
 R, 19 , 67 ,500
 1478,112,321.,
 R, 20 , 67 ,500
 1519,114,327.,
 D, 4.5
 ALL,ALL
 C,C

SOUND32 - RELEASE 07/30/91

TITLE: TPM 21159 - Parcel 4 - First Level Unmitigated

BARRIER DATA

BAR	BARRIER HEIGHTS							BAR		
ELE	0	1	2	3	4	5	6	7	ID	LENGTH TYPE

1	-	0.*							B1 P1	302.4 BERM
2	-	0.*							B1 P2	184.5 BERM
3	-	0.*							B1 P3	371.8 BERM
4	-	0.*							B1 P4	733.9 BERM
5	-	0.*							B1 P5	989.2 BERM
6	-	0.*							B2 P1	97.7 BERM
7	-	0.*							B2 P2	313.3 BERM
8	-	0.*							B2 P3	364.1 BERM
9	-	0.*							B2 P4	733.8 BERM
10	-	0.*							B2 P5	989.2 BERM
11	-	0.*							B3 P1	194.1 BERM
12	-	0.*							B3 P2	343.3 BERM
13	-	0.*							B3 P3	457.7 BERM
14	-	0.*							B3 P4	241.3 BERM

	0	1	2	3	4	5	6	7		

REC REC ID DNL PEOPLE LEQ(CAL)

 1 R-1 67. 500. 62.3
 2 R-2 67. 500. 62.6
 3 R-3 67. 500. 62.9
 4 R-4 67. 500. 63.5
 5 R-5 67. 500. 63.9
 6 R-6 67. 500. 63.3

7	R-7	67.	500.	63.0
8	R-8	67.	500.	62.7
9	R-9	67.	500.	62.8
10	R-10	67.	500.	63.1
11	R-11	67.	500.	63.4
12	R-12	67.	500.	64.1
13	R-13	67.	500.	63.9
14	R-14	67.	500.	63.6
15	R-15	67.	500.	63.3
16	R-16	67.	500.	63.0
17	R-17	67.	500.	62.7
18	R-18	67.	500.	63.0
19	R-19	67.	500.	62.7
20	R-20	67.	500.	63.4

TPM 21159 - Parcel 4 - First Level Mitigated

T-Peak Hour, 1

11883 , 65 , 195 , 60 , 122 , 60

T-Peak Hour, 2

11883 , 65 , 195 , 60 , 122 , 60

L-I-15 South, 1

N,2174.,587,390,

N,2047.,303,370,

N,1898.,-37,350,

N,1669.,-733,310,

N,1448.,-1697,290,

L-I-15 North, 2

N,2697.,1392,425,

N,2325.,669,390,

N,2273.,555,379,

N,2149.,281,359,

N,2024.,-44,341,

N,1795.,-740,305,

N,1574.,-1704,290,

B-Roadedge Southbound, 1 , 1 , 0 ,0

2024.,773,460,460,

2081.,487,380,380,

2020.,313,373,373,

1873.,-28,354,354,

1644.,-724,312,312,

1423.,-1688,291,291,

B-Center Median, 2 , 1 , 0 ,0

2245.,674,400,400,

2206.,585,390,390,

2082.,298,370,370,

1936.,-35,350,350,

1707.,-731,310,310,

1486.,-1695,290,290,

B-Topo - NE portion, 3 , 1 , 0 ,0

1957.,636,440,440,

1953.,829,460,460,

1949.,1164,535,535,

1787.,1550,720,720,

1808.,1787,760,760,

B-Parcel 4 berm, 4 , 1 , 0 ,0

1520.,58,310,310,

1558.,111,364,364,

1635.,223,364,364,

1691.,340,364,364,
 1645.,560,456,456,
 B-Parcel 3 berm, 5 , 1 , 0 ,0
 1150.,18,350,350,
 1202.,9,330,330,
 1270.,8,320,320,
 1404.,10,314,314,
 R, 1 , 67 ,500
 1457,271,335.,
 R, 2 , 67 ,500
 1500,273,335.,
 R, 3 , 67 ,500
 1540,275,335.,
 R, 4 , 67 ,500
 1582,275,340.,
 R, 5 , 67 ,500
 1593,235,340.,
 R, 6 , 67 ,500
 1551,235,335.,
 R, 7 , 67 ,500
 1510,234,335.,
 R, 8 , 67 ,500
 1467,232,335.,
 R, 9 , 67 ,500
 1436,190,335.,
 R, 10 , 67 ,500
 1478,192,335.,
 R, 11 , 67 ,500
 1520,194,335.,
 R, 12 , 67 ,500
 1561,195,340.,
 R, 13 , 67 ,500
 1550,155,335.,
 R, 14 , 67 ,500
 1509,153,335.,
 R, 15 , 67 ,500
 1467,152,335.,
 R, 16 , 67 ,500
 1428,157,335.,
 R, 17 , 67 ,500
 1420,130,328.,
 R, 18 , 67 ,500
 1437,114,328.,
 R, 19 , 67 ,500
 1478,112,321.,
 R, 20 , 67 ,500
 1519,114,327.,
 D, 4.5
 ALL,ALL
 C,C

SOUND32 - RELEASE 07/30/91
 TITLE: TPM 21159 - Parcel 4 - First Level Mitigated

BARRIER DATA

BAR	BARRIER HEIGHTS							BAR			
ELE	0	1	2	3	4	5	6	7	ID	LENGTH	TYPE

1	-	0.*		B1 P1	302.4	BERM
2	-	0.*		B1 P2	184.5	BERM
3	-	0.*		B1 P3	371.8	BERM
4	-	0.*		B1 P4	733.9	BERM
5	-	0.*		B1 P5	989.2	BERM
6	-	0.*		B2 P1	97.7	BERM
7	-	0.*		B2 P2	313.3	BERM
8	-	0.*		B2 P3	364.1	BERM
9	-	0.*		B2 P4	733.8	BERM
10	-	0.*		B2 P5	989.2	BERM
11	-	0.*		B3 P1	194.1	BERM
12	-	0.*		B3 P2	343.3	BERM
13	-	0.*		B3 P3	457.7	BERM
14	-	0.*		B3 P4	241.3	BERM
15	-	0.*		B4 P1	84.7	BERM
16	-	0.*		B4 P2	135.9	BERM
17	-	0.*		B4 P3	129.7	BERM
18	-	0.*		B4 P4	242.9	BERM
19	-	0.*		B5 P1	56.4	BERM
20	-	0.*		B5 P2	68.7	BERM
21	-	0.*		B5 P3	134.1	BERM

0	1	2	3	4	5	6 7

REC REC ID DNL PEOPLE LEQ(CAL)

1	R-1	67.	500.	59.7
2	R-2	67.	500.	58.8
3	R-3	67.	500.	55.9
4	R-4	67.	500.	54.8
5	R-5	67.	500.	53.3
6	R-6	67.	500.	54.3
7	R-7	67.	500.	58.9
8	R-8	67.	500.	60.0
9	R-9	67.	500.	60.9
10	R-10	67.	500.	60.4
11	R-11	67.	500.	58.8
12	R-12	67.	500.	53.8
13	R-13	67.	500.	53.6
14	R-14	67.	500.	60.2
15	R-15	67.	500.	61.3
16	R-16	67.	500.	61.5
17	R-17	67.	500.	61.4
18	R-18	67.	500.	61.8
19	R-19	67.	500.	60.8
20	R-20	67.	500.	60.1

ATTACHMENT G

FUTURE BUILDING FAÇADE NOISE MODEL
FILES

TPM 21159 - First Level Building Facades

T-Peak Hour, 1

11883 , 65 , 195 , 60 , 122 , 60

T-Peak Hour, 2

11883 , 65 , 195 , 60 , 122 , 60

L-I-15 South, 1

N,2184.,587,390,

N,2057.,303,370,

N,1908.,-37,350,

N,1679.,-733,310,

N,1458.,-1697,290,

L-I-15 North, 2

N,2305.,669,390,

N,2253.,555,379,

N,2129.,281,359,

N,2004.,-44,341,

N,1775.,-740,305,

N,1554.,-1704,290,

B-Roadedge Southbound, 1 , 1 , 0 ,0

2024.,773,460,460,

2081.,487,380,380,

2020.,313,373,373,

1873.,-28,354,354,

1644.,-724,312,312,

1423.,-1688,291,291,

B-Center Median, 2 , 1 , 0 ,0

2245.,674,400,400,

2206.,585,390,390,

2082.,298,370,370,

1936.,-35,350,350,

1707.,-731,310,310,

1486.,-1695,290,290,

B-Topo - NE portion, 3 , 1 , 0 ,0

1957.,636,440,440,

1953.,829,460,460,

1949.,1164,535,535,

1787.,1550,720,720,

1808.,1787,760,760,

B-Parcel 2 edge, 4 , 2 , 0 ,0

1228.,595,530,536,

1260.,598,530,536,

1363.,634,530,536,

1435.,700,530,536,

B-Parcel 4 berm, 5 , 1 , 0 ,0

1520.,58,310,310,

1558.,111,359,359,

1635.,223,359,359,

1691.,340,359,359,

1645.,560,456,456,

B-Parcel 3 berm, 6 , 1 , 0 ,0

1150.,18,350,350,

1202.,9,330,330,

1270.,8,320,320,

1404.,10,314,314,

R, 1 , 67 ,500

701,1350,750.,P1

R, 2 , 67 ,500

1305,640,535.,P2

R, 3 , 67 ,500

1246,124,327.,P3
R, 4 , 67 ,500
1485,176,335.,P4
D, 4.5
ALL,ALL
C,C

SOUND32 - RELEASE 07/30/91

TITLE: TPM 21159 - First Level Building Facades

BARRIER DATA

BAR	BARRIER HEIGHTS							BAR	LENGTH	TYPE
ELE	0	1	2	3	4	5	6	7	ID	
1	-	0.*							B1 P1	302.4 BERM
2	-	0.*							B1 P2	184.5 BERM
3	-	0.*							B1 P3	371.8 BERM
4	-	0.*							B1 P4	733.9 BERM
5	-	0.*							B1 P5	989.2 BERM
6	-	0.*							B2 P1	97.7 BERM
7	-	0.*							B2 P2	313.3 BERM
8	-	0.*							B2 P3	364.1 BERM
9	-	0.*							B2 P4	733.8 BERM
10	-	0.*							B2 P5	989.2 BERM
11	-	0.*							B3 P1	194.1 BERM
12	-	0.*							B3 P2	343.3 BERM
13	-	0.*							B3 P3	457.7 BERM
14	-	0.*							B3 P4	241.3 BERM
15	-	6.*							B4 P1	32.1 MASONRY
16	-	6.*							B4 P2	109.1 MASONRY
17	-	6.*							B4 P3	97.7 MASONRY
18	-	0.*							B5 P1	81.6 BERM
19	-	0.*							B5 P2	135.9 BERM
20	-	0.*							B5 P3	129.7 BERM
21	-	0.*							B5 P4	244.8 BERM
22	-	0.*							B6 P1	56.4 BERM
23	-	0.*							B6 P2	68.7 BERM
24	-	0.*							B6 P3	134.1 BERM

	0	1	2	3	4	5	6	7		

REC REC ID DNL PEOPLE LEQ(CAL)

1	P1	67.	500.	56.4
2	P2	67.	500.	59.0
3	P3	67.	500.	61.1
4	P4	67.	500.	60.9

TPM 21159 - Second Level Building Facades

T-Peak Hour, 1

11883 , 65 , 195 , 60 , 122 , 60

T-Peak Hour, 2

11883 , 65 , 195 , 60 , 122 , 60

L-I-15 South, 1
N,2184.,587,390,
N,2057.,303,370,
N,1908.,-37,350,
N,1679.,-733,310,
N,1458.,-1697,290,
L-I-15 North, 2
N,2305.,669,390,
N,2253.,555,379,
N,2129.,281,359,
N,2004.,-44,341,
N,1775.,-740,305,
N,1554.,-1704,290,
B-Roadedge Southbound, 1 , 1 , 0 ,0
2024.,773,460,460,
2081.,487,380,380,
2020.,313,373,373,
1873.,-28,354,354,
1644.,-724,312,312,
1423.,-1688,291,291,
B-Center Median, 2 , 1 , 0 ,0
2245.,674,400,400,
2206.,585,390,390,
2082.,298,370,370,
1936.,-35,350,350,
1707.,-731,310,310,
1486.,-1695,290,290,
B-Topo - NE portion, 3 , 1 , 0 ,0
1957.,636,440,440,
1953.,829,460,460,
1949.,1164,535,535,
1787.,1550,720,720,
1808.,1787,760,760,
B-Parcel 2 edge, 4 , 2 , 0 ,0
1228.,595,530,536,
1260.,598,530,536,
1363.,634,530,536,
1435.,700,530,536,
B-Parcel 4 berm, 5 , 1 , 0 ,0
1520.,58,310,310,
1558.,111,359,359,
1635.,223,359,359,
1691.,340,359,359,
1645.,560,456,456,
B-Parcel 3 berm, 6 , 1 , 0 ,0
1150.,18,350,350,
1202.,9,330,330,
1270.,8,320,320,
1404.,10,314,314,
R, 1 , 67 ,500
701,1350,760.,P1
R, 2 , 67 ,500
1305,640,545.,P2
R, 3 , 67 ,500
1246,124,337.,P3
R, 4 , 67 ,500
1485,176,345.,P4
D, 4.5
ALL,ALL

C,C

SOUND32 - RELEASE 07/30/91

TITLE: TPM 21159 - Second Level Building Facades

BARRIER DATA

BAR	BARRIER HEIGHTS							BAR		
ELE	0	1	2	3	4	5	6	7	ID	LENGTH TYPE
1	-	0.*							B1 P1	302.4 BERM
2	-	0.*							B1 P2	184.5 BERM
3	-	0.*							B1 P3	371.8 BERM
4	-	0.*							B1 P4	733.9 BERM
5	-	0.*							B1 P5	989.2 BERM
6	-	0.*							B2 P1	97.7 BERM
7	-	0.*							B2 P2	313.3 BERM
8	-	0.*							B2 P3	364.1 BERM
9	-	0.*							B2 P4	733.8 BERM
10	-	0.*							B2 P5	989.2 BERM
11	-	0.*							B3 P1	194.1 BERM
12	-	0.*							B3 P2	343.3 BERM
13	-	0.*							B3 P3	457.7 BERM
14	-	0.*							B3 P4	241.3 BERM
15	-	6.*							B4 P1	32.1 MASONRY
16	-	6.*							B4 P2	109.1 MASONRY
17	-	6.*							B4 P3	97.7 MASONRY
18	-	0.*							B5 P1	81.6 BERM
19	-	0.*							B5 P2	135.9 BERM
20	-	0.*							B5 P3	129.7 BERM
21	-	0.*							B5 P4	244.8 BERM
22	-	0.*							B6 P1	56.4 BERM
23	-	0.*							B6 P2	68.7 BERM
24	-	0.*							B6 P3	134.1 BERM

	0	1	2	3	4	5	6	7		

REC REC ID DNL PEOPLE LEQ(CAL)

1 P1 67. 500. 56.4
2 P2 67. 500. 63.3
3 P3 67. 500. 61.9
4 P4 67. 500. 62.7
